ELECTRICAL TIMES

THURSDAY
11 MAY
1939
SIXPENCE

888 ft

The largest Babcock & Wilcox travelling grate stokers in operation are 37 feet wide by 22 feet long = 814 sq. ft., eighteen of which are installed in or on order for the Vaal Generating Station, South Africa. Two similar stokers under construction for a Continental Power Station are 2 feet longer, giving a grate area of 888 sq. ft.

BABCOCK & WILCOX LTD.
BABCOCK HOUSE, FARRINGDON STREET
LONDON E.C.4

COOKING IN CRAMPED QUARTERS?

The ready-made solution

is the Creda Cadet. Not just another breakfast cooker—it's designed to do *all* cookery jobs. The Cadet is *fully insulated*, has a thermostatically controlled oven, radiant type boiling plate controlled by Simmerstat and a warming cupboard. And, so important from the customer's point of view—the Cadet connects to an ordinary domestic heating point. Total wattage 2,850 Catalogue No. CT1

IMMEDIATE DELIVERY

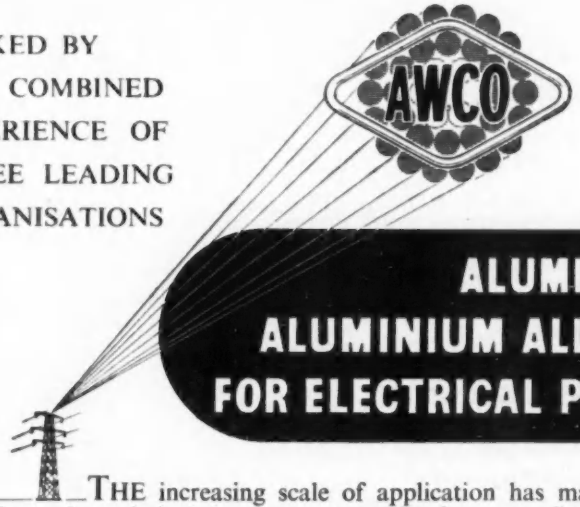
Creda CADET

MADE BY THE HOUSE OF Simplex

SIMPLEX ELECTRIC COMPANY LIMITED
OLDBURY BIRMINGHAM AND BRANCHES

A TI COMPANY

BACKED BY
THE COMBINED
EXPERIENCE OF
THREE LEADING
ORGANISATIONS



ALUMINIUM and ALUMINIUM ALLOY WIRE FOR ELECTRICAL PURPOSES

THE increasing scale of application has made it necessary to co-ordinate the technical development, production, stranding and marketing of aluminium and aluminium alloy wire.

To fulfil this need, The British Aluminium Company Ltd., Tube Investments Ltd., and the Hawker Siddeley Group Ltd., combined to launch Aluminium Wire & Cable Co. Ltd., whose products are marketed under the trade name AWCO.

The Company has acquired a completely modern works at Port Tennant, Swansea, with the most up-to-date plant, part of which is already in full production.

Through the combined resources of its three sponsors, Aluminium Wire & Cable Co. Ltd. benefits by an unequalled experience gained over the past 30 years. It is the Company's aim to ensure that users receive the benefit of lowest possible prices consistent with high quality production. A technical service is available for all who are considering the use of aluminium or aluminium alloy wire for both electrical and non-electrical purposes. Application should be made to the Sales Office.

AWCO Products include:—

STRANDED CONDUCTORS & CABLE

Overhead Transmission Lines:—Steel-cored and plain aluminium conductors in the full range covered by B.S. 215/1934 and also, to meet special requirements, conductors in aluminium alloy with, or without, steel-core. Pure aluminium or alloy conductors supplied for conversion to insulated cables by cable makers.

OVERHEAD TRANSMISSION LINE FITTINGS & ACCESSORIES

The Company has extensive experience in the design of aluminium fittings for overhead lines and supplies, anchor clamps, tension and non-tension joints, tee-tappings, and terminals, etc., generally from stock in normal sizes.

AWCO
REG. TRADE MARK

Manufactured by **ALUMINIUM WIRE & CABLE CO. LTD.**

Head Office and Works: PORT TENNANT, SWANSEA, GLAMORGAN

Sales Office: 10, BUCKINGHAM PLACE, WESTMINSTER, LONDON, S.W.1

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A

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An essential for your reference shelf. The new WYLEX Catalogue describes and illustrates the full range of high-quality WYLEX accessories, designed for the modern electrical needs of the home, and for the convenience and profit of the modern electrical contractor.

If you have not already had your WYLEX Catalogue —

SEND P.C. FOR COPY to:

GEORGE H. SCHOLES & CO. LTD
WYLEX WORKS. WYTHENSHAWE, MANCHESTER

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"WYLEX" PLUGS & SOCKETS · 60 amp & 30 amp SWITCHES
COOKER UNITS · FUSE UNITS · CLOCK CONNECTORS

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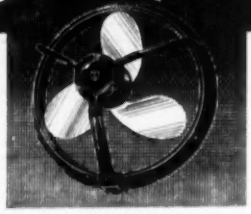

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B.T.H. MOTOR
AEROFOIL IMPELLER
CAST IRON CHASSIS

SIZE	R.P.M.	AIR OUTPUT	LIST PRICE
12 ins.	1350	930 C.F.M	£4 : 17 : 6
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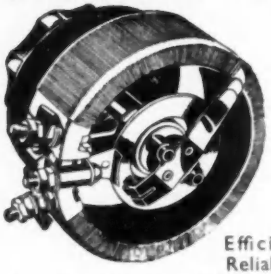


Efficient and Reliable, these instruments are second to none. Our Technical service will be happy to advise you in any difficulty, so do not hesitate to get in touch with us soon.

CRESSALL
registered Trade Name of
THE CRESSALL MANUFACTURING CO., LTD.
Tower Street, Birmingham 19

Telephone: ASTon Cross 2666 (3 lines). *Telegrams:* "OHMIC" Birmingham

THIS is the Trademark of The Steel Company of Wales Limited whose new plant will come into operation in 1951.

Products of the Company will be

Hot Rolled and Cold Reduced Sheets and Coils up to 72" sheared width in qualities for auto-bodies, vitreous enamelling, extra deep drawing, etc. • Galvanized Flat and Corrugated Sheets • Electrical Sheets for Dynamos and Transformers • Stainless Steel Sheets • Blackplate • Hot and Cold Reduced Tinplate both hot dipped and electrolytically tinned • Plates up to ½" thick by 72" wide • Flange, Bullhead and Bridge Rails • Fishplates • Steel Railway Sleepers • Sections • Slabs • Basic Pig Iron • Coke and By-Products • Sized Limestone

THE STEEL COMPANY OF WALES LIMITED

ABBEY WORKS · PORT TALBOT

1912

1950

The Story of BELLING *& Company Ltd.* No. 4

Last time, I hope you remember, I was telling you how I set about designing our very first fire with an entirely new kind of firebar. Having got the idea for this "firebar" and a rough design for the "frame," the next step was, of course, to get a sample made. A wooden pattern for the "frame" was fortunately a very simple matter. Mr. Oxspring of Ponders End, originally Ediswan's pattern maker, whom of course I knew quite well, had also started on his own account a little time previously. He made this for me and put in the necessary professional touches.

The "firebar" was another matter altogether. I went round and round the Potteries and was just about giving up hope when at last the late Mr. Watkins of Macintyre & Co., Ltd., Burslem came to my rescue. He said he would take a "risk" and have a go at the job. He made the necessary very expensive die, only charging us a nominal figure for it. The results were most successful and he produced a really splendid firebar.

It turned out to be a good "risk" on his part as since that time we have had many tens of thousands of firebars from them and still continue to get quite a part of our requirements although we now have our own "fireclay" department. Presently we had sample firebars arriving and, of course, we began to get excited. These bars were not wound with a spiral but with the wire straight from the reel.

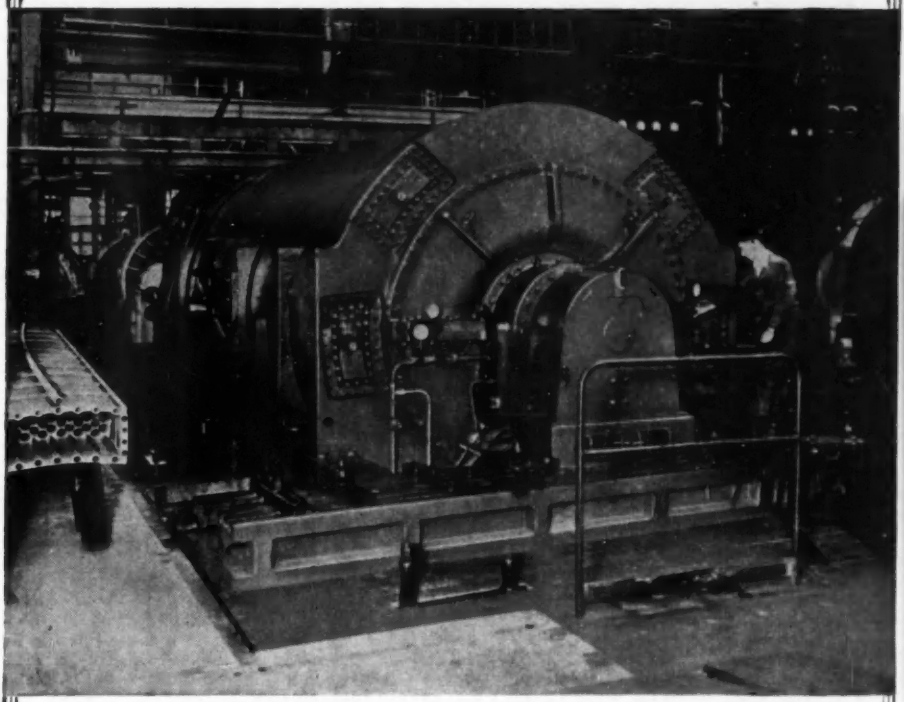
In the meantime, Messrs. Cottis & Co., of Epping had made some castings for us from the pattern and we had also got in the necessary switches, resistance wire, muranese glass etc., and we put together a sample.

So in the late autumn of 1912 I took over to Mr. How's house at Barnes the first complete fire we ever assembled. Mr. Arnold also came along from Chelmsford so we three, who were the original partners, were able to have a good discussion about it and to see it actually on circuit.

We were fortunate also in being able to get Mr. C. F. Davidson who at that time was Chief Electrical Engineer of the Barnes U.D.C. to come along and give us his views as well. Summed up we thought the effort "showed promise" and decided to make up 2 or 3 dozen fires and see if Engineers and the trade generally thought as much of the fire as we did. We also, of course, had to put some more money in the business as our original £450 was fast disappearing. Whilst we were making up these fires I got out a small catalogue which showed pictures of the fire and also of a kettle, water circulator and geyser on which I had been working. This little catalogue was produced for us by Bennett & Starling of Enfield in double quick time and incidentally we have done business with them ever since. In fact, our orders in the early days must have helped a lot in building up their business and I hate to think I never took up any of their shares when an opportunity arose. Anyway, with the catalogue and a sample I set out with some trepidation on my first journey as a traveller which was in late 1912. I wish I had more details but I haven't as I've never kept a "chit" in connection with my travelling or expenses during all my life (which even now causes a lot of bother with our local Inspector of Taxes!). Anyway, I have a few memories of my early travelling days which will come in the next chapter.

C. R. Belling

WAKEFIELD OIL FOR INDUSTRY



The first hydrogen-cooled turbo-alternator to be permanently installed in Europe, the 60,000 kW Metropolitan Vickers set at the Littlebrook Station. Lubricated with Wakefield Perfecto Special X

British Electricity Authority use

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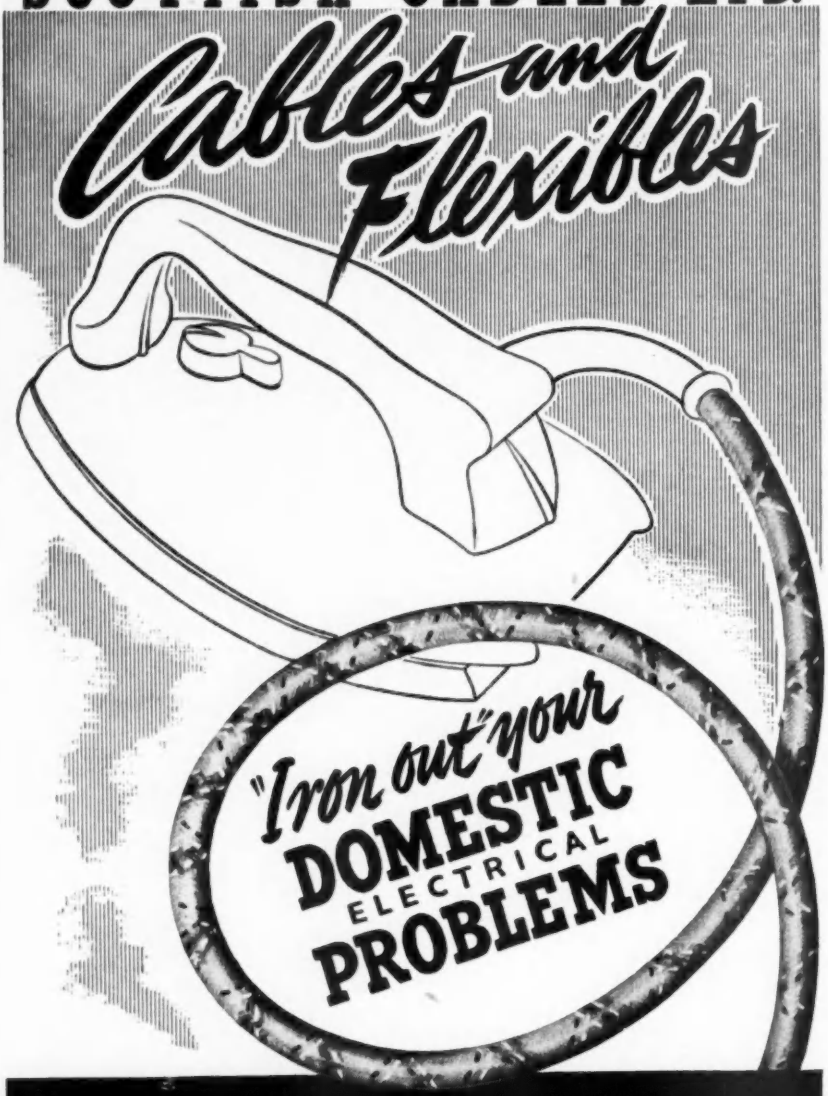

"Iron out" your DOMESTIC ELECTRICAL PROBLEMS

SCOTTISH CABLES LIMITED

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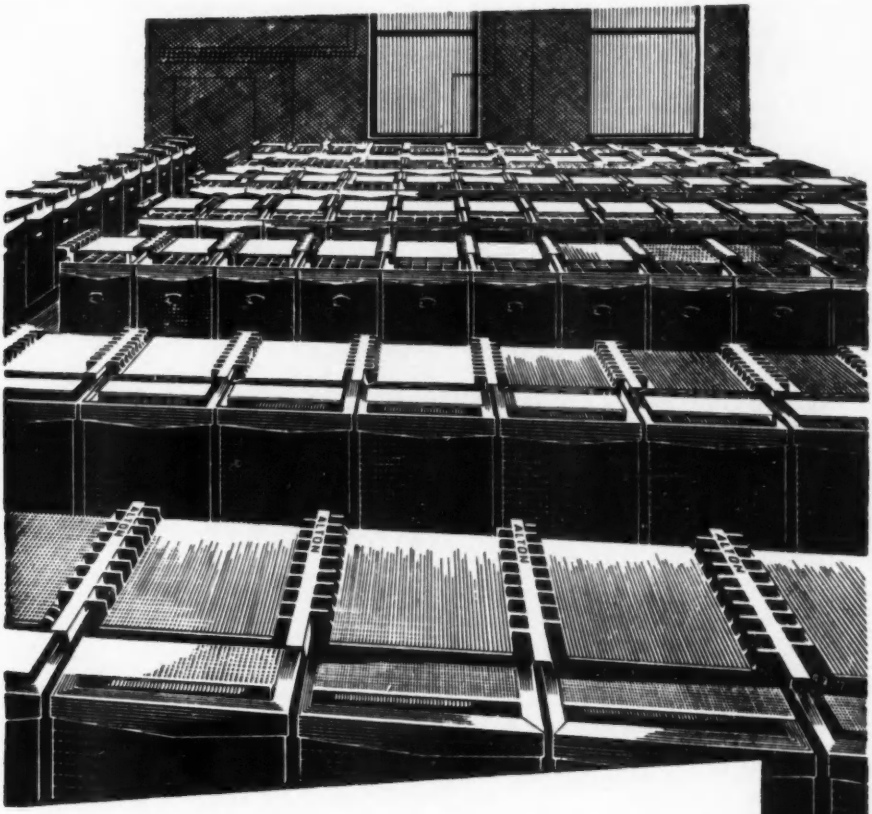

Alton has been exporting batteries for thirty years. In installations in sixty-five countries Alton Batteries, in capacities from 10 to 15,000 ampere-hours, are giving the service only good batteries can give. Alton, in any language, means good batteries and firm delivery dates.

ALTON

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Alton, Hants. Telephone: Alton 2267 and 2268
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Alton can also supply renewal plates for all makes of battery, British & Continental

HIGGS MOTORS
CHAIRMAN WALTER F. HIGGS, M.I.E.E. LTD.
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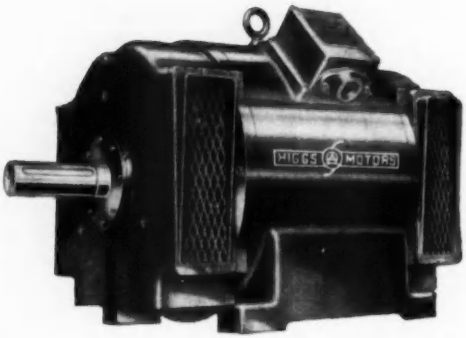

Sturdy cast-iron stator frame.
Screen protected enclosure with maximum accessibility.
Substantial shaft, deep-groove ball bearings,
accessible terminals,
AND
GUARANTEED FOR EVER

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BELMOS

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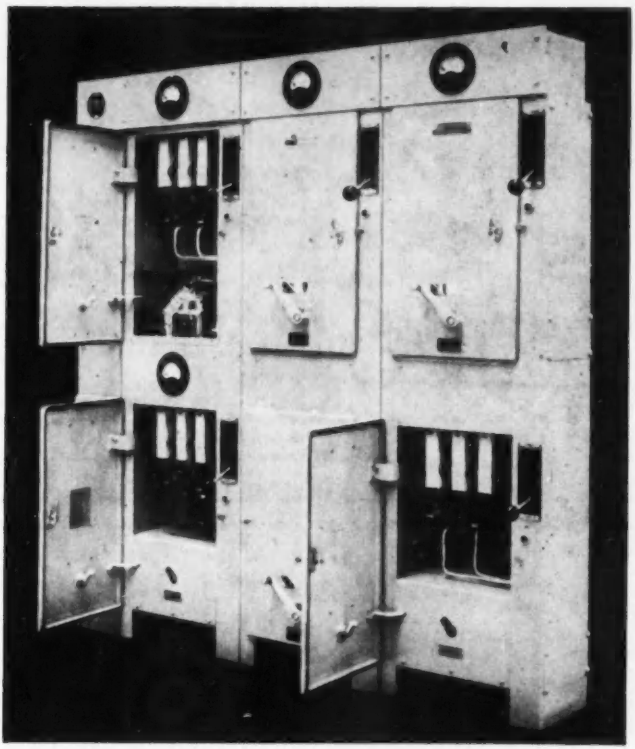

UP TO 200 AMPS 650 VOLTS

FEATURES:

- DOUBLE TIER—SPACE SAVING
- UNIT CONSTRUCTION—READILY EXTENDED
- ISOLATOR INTERLOCKED WITH DOOR
- WITH OR WITHOUT HRC BACK-UP FUSES
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THE BELMOS COMPANY LTD.

BELLSHILL • LANARKSHIRE

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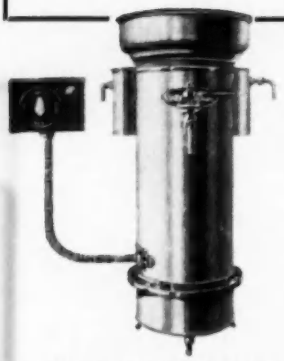
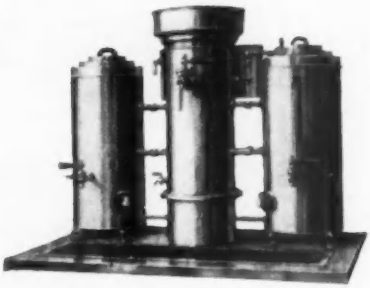
WATER BOILERS AND CAFE SETS



Stott's Electrically-heated Water Boilers give a quick and constant supply of boiling water only. Automatic cold feed. Economical to run.



Stott's Electrically-heated Cafe Sets comprise a water boiler with automatic cold feed, milk-warming urn, and urn for coffee-making by the Stott "Perco Filtro" System. Can be fitted with auto-switch coupled to draw-off tap.

Send today for full details.

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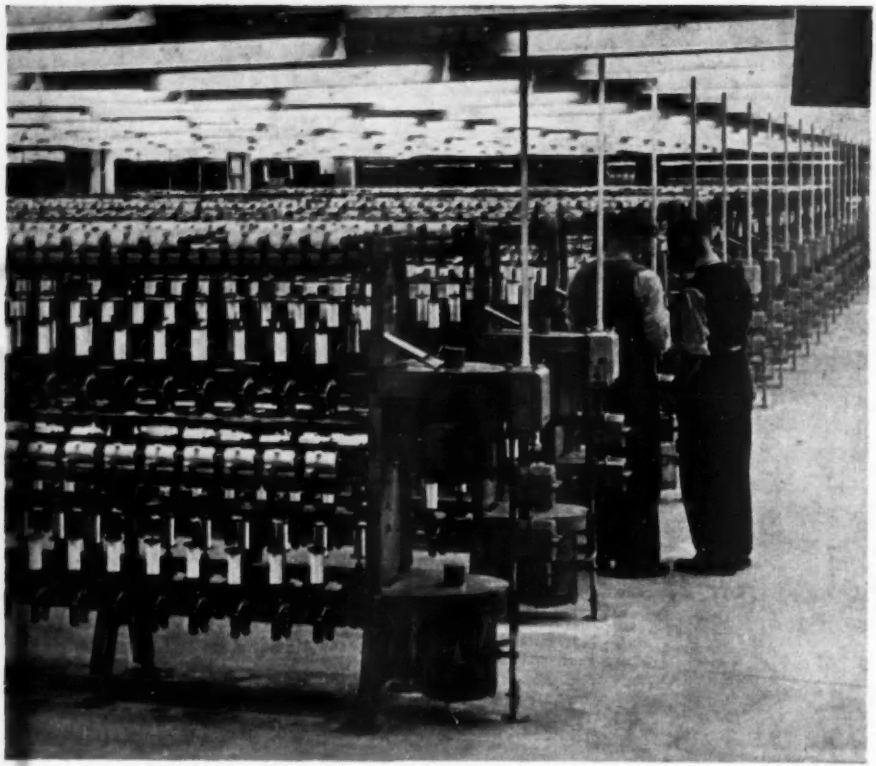


Electrically powered machines "throwing" nylons for export

Electrical power or man power?

Industry's need

Britain's factories *must* produce more—and one way of achieving this is by extending the use of electrical power and equipment. With more horse-power at their disposal, operatives in almost every industry can greatly increase their individual output.

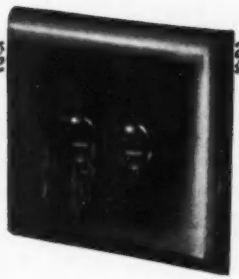
Electricity's answer

British Electricity are getting on with the urgent task of providing our factories and homes with *all* the power they need. A great expansion programme is well under way—38 new power stations are being built and new plant is being installed in 43 existing stations.

Electricity
more power
behind production
BRITISH ELECTRICITY

TESTS

Prove that if the "NEW DAY" switches being installed to-day are operated ten times daily for 100 years their action will still be as smooth, quiet and positive as it is when new.



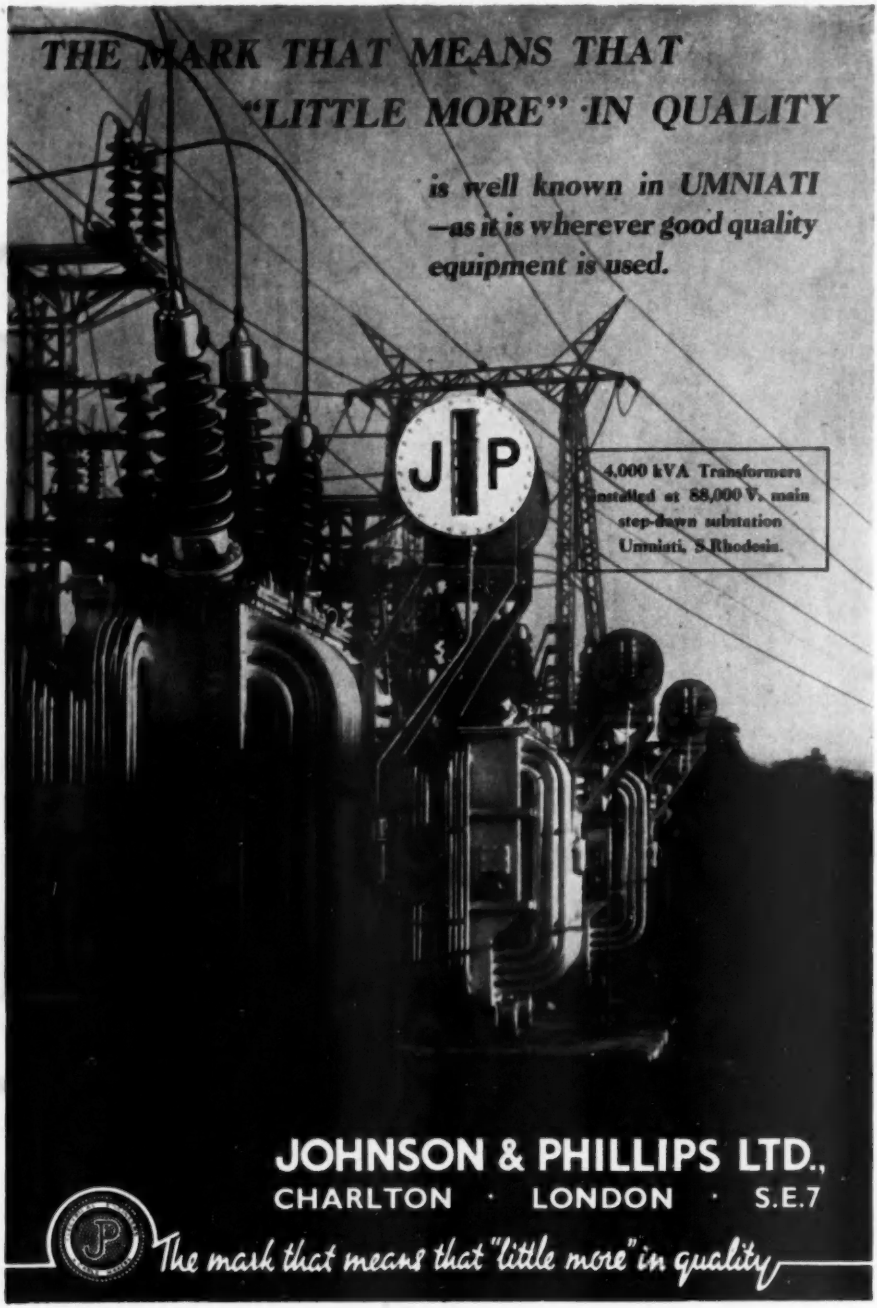
IN their resolve to make available for domestic installations a really *good* switch matching the greatly improved standards officially set for POST-WAR HOUSING, New Day faced the problem of eliminating the wear too frequently responsible for the premature failure of conventional designs.

They solved the problem by the use of BALL BEARINGS. The result is a switch with an infinite mechanical life ; an electrical performance and capacity for overload several times that called for in the relevant B.S.1299 ; a simplified form of fixing which halves labour costs ; and an unusually attractive appearance which reflects the meticulous care applied throughout the design of this exceptionally fine tumbler switch.

You are invited to write for samples to :

NEW DAY ELECTRICAL ACCESSORIES LTD

MARY STREET · BIRMINGHAM 12 · Telephone CALTHORPE 2621


THE MARK THAT MEANS THAT
"LITTLE MORE" IN QUALITY
is well known in UMNIATI
—as it is wherever good quality
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4,000 kVA Transformers
installed at 88,000 V. main
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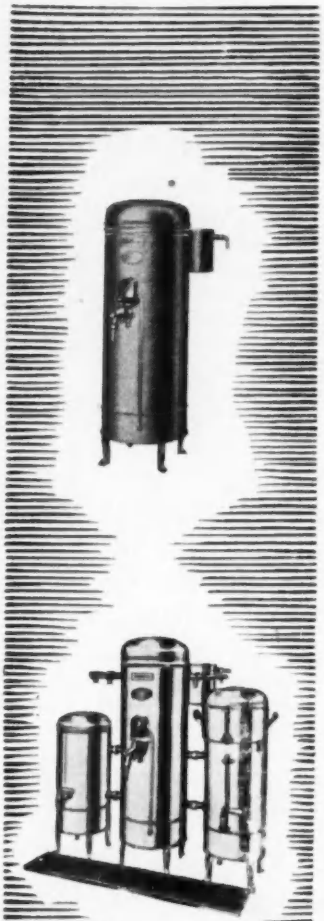

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you can rely on a Jackson Boiler

Jackson Boilers have earned a world-wide reputation for reliability. In hotels, hospitals, ships, schools and catering establishments everywhere, you'll find them giving swift, fool-proof service.

First-class materials, an outstanding design and above all careful, highly skilled pre-war quality craftsmanship—these are the secrets of Jackson success.

In a few minutes, a 'Jackson' delivers a constant supply of boiling water. Self-feeding, self-regulating, fully automatic, it almost looks after itself. It is economical too. Your turnover, fuel bills and labour costs will all present a far more cheerful picture when you install the impressive 1950 'Jackson.'

Cleaning and maintenance are extremely simple, as the whole of the waterways can be quickly exposed—a vital feature in hard-water areas. The 'Jackson' is finished in high quality chromium or burnished copper.

May we send you full details or arrange a demonstration?

YOU CAN RELY ON A 'JACKSON'

Jackson Boilers Ltd.

TEL. 31008 **Shafton Lane, Leeds, 11** TEL. 31008

—famed for their instantaneous water boilers

The Jackson 'Care and Maintenance service' is increasingly popular and an invaluable safeguard. Full information gladly supplied. Terms on request.

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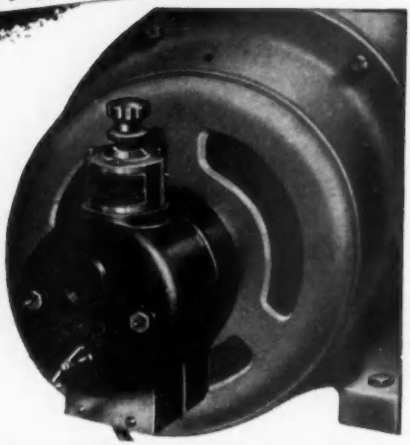
ISENTHAL

M.S. AUTOMATIC VOLTAGE REGULATOR



Violent load changes . . . temperature fluctuations . . . wide variations of engine speed . . . the ISENTHAL "M.S." Automatic Voltage Regulator responds *immediately* to such conditions and maintains constant voltage with accuracy and reliability. Easily fitted without special experience, the "M.S." Regulator is remarkably simple and inexpensive to install and maintain.

● **For A.C. or D.C. GENERATORS, BOOSTER SETS, STEAM, DIESEL or HYDRO-ELECTRIC GENERATING PLANTS.**

We will gladly supply full details upon request and our technicians are at your disposal for advice upon your problems

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Ia.8

NETTLE

ARCHITECTURAL LIGHTING

Write for new leaflet describing in brief important items from the NETTLE range

The needs of architectural lighting are catered for in the NETTLE range by this attractive lamp fitting. The clean lines of this polished white moulding will be appreciated. Alternative colours may be supplied. 100% light distributed without glare. Being all-insulated this fitting is especially suitable for bathrooms, etc.

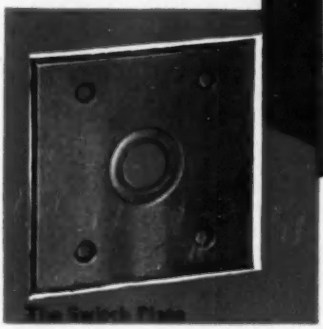
RIGHT ANGLE WALL BRACKET

The right angle wall bracket is eminently suitable for ships' bunks, bathrooms, kitchens, etc. Available in white as illustrated, or with H.O. Skirt, and in brown or black.

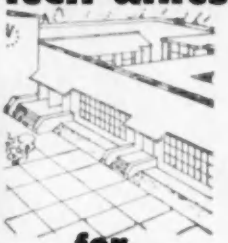
VICTOR H IDDON LTD WYTHENSHAWE MANCHESTER

5 amp. & 15 amp. flush switch units

The Switch



The Switch Plate



for schools

This flush switch unit is a worthy criterion of all BRITMAC products and is one of a large range of electrical accessories that has been supplied in quantity for schools, technical colleges, hospitals and other public buildings.

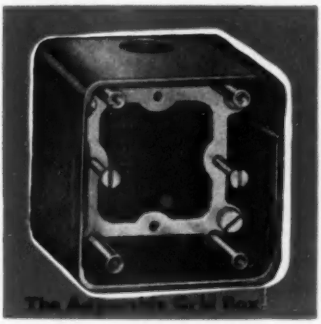
for hospitals

All BRITMAC ELECTRICAL ACCESSORIES are characterised by their strength, safety and efficiency over long periods and Installation Engineers who specify BRITMAC products by name are certain of the highest standard of quality, perfection of finish, coupled with a prompt and personal service.

The Switch: This is the well-known 'Silomac' for use on a.c. current only and, as the name implies, is silent in operation.

The Switch Plate: Incorporates the cuttered-hole and four corner screws, dispensing with the need for a switch ring. For added safety, corner screws of a 'secret' pattern can be supplied.

The Adjustable Grid Box: Rigidly constructed and designed to give a wide margin of adjustment and the maximum space for wiring.



The Adjustable Grid Box

for public buildings

BRITMAC

BRITMAC ELECTRICAL CO. LTD.

SALES ORGANISATION OF C. H. PARSONS LTD.

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London Office: *121, VICTORIA ST., LONDON, S.W.1. Telephone: VICTORIA 9778/9.*

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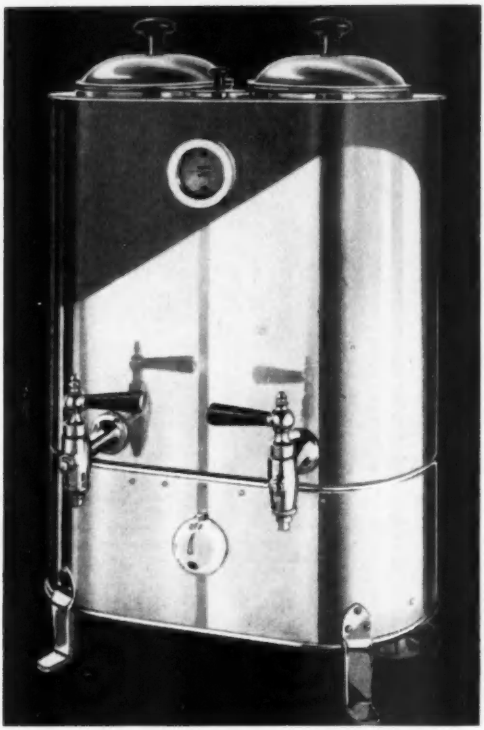
STRIDES AHEAD !

Combined MILK and COFFEE URN

—featuring the latest improvements in design and service. The example illustrated is controlled by a variable thermostat with "off" position acting as a switch. The water jacket temperature can be regulated, the thermostat being graduated up to boiling point.

Constructed of Monel non-corrosive metal, which is self-coloured and requires no tinning—also in Copper Chromium plate finish.

Fullest details on application.



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D.C. up to 80 H.P.

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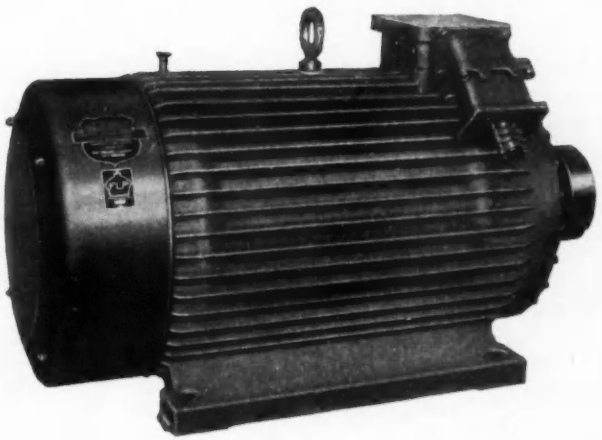

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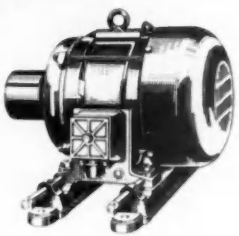

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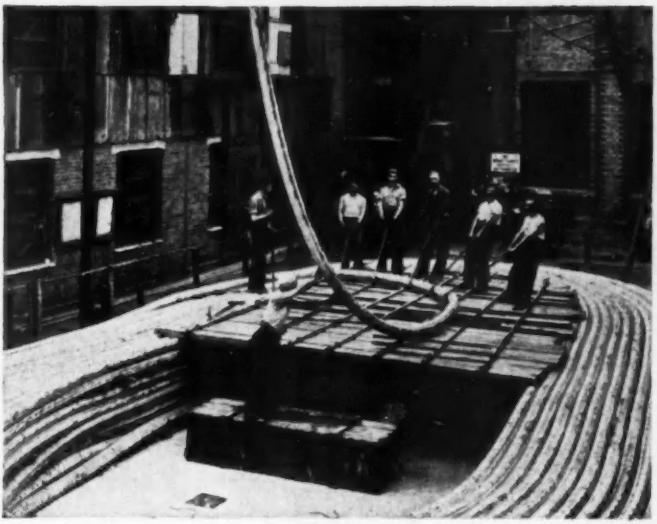

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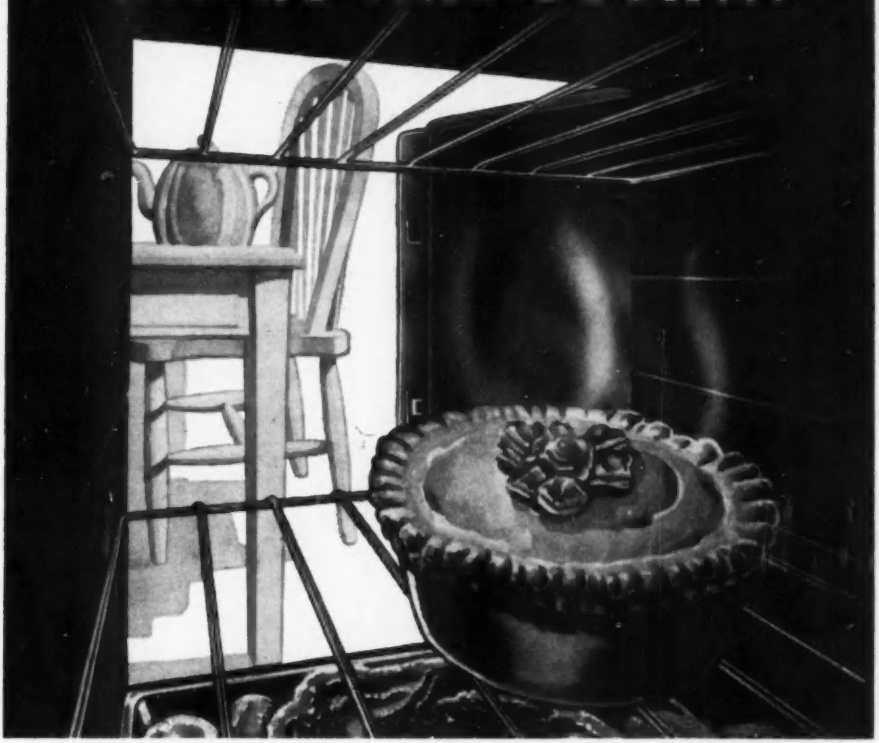

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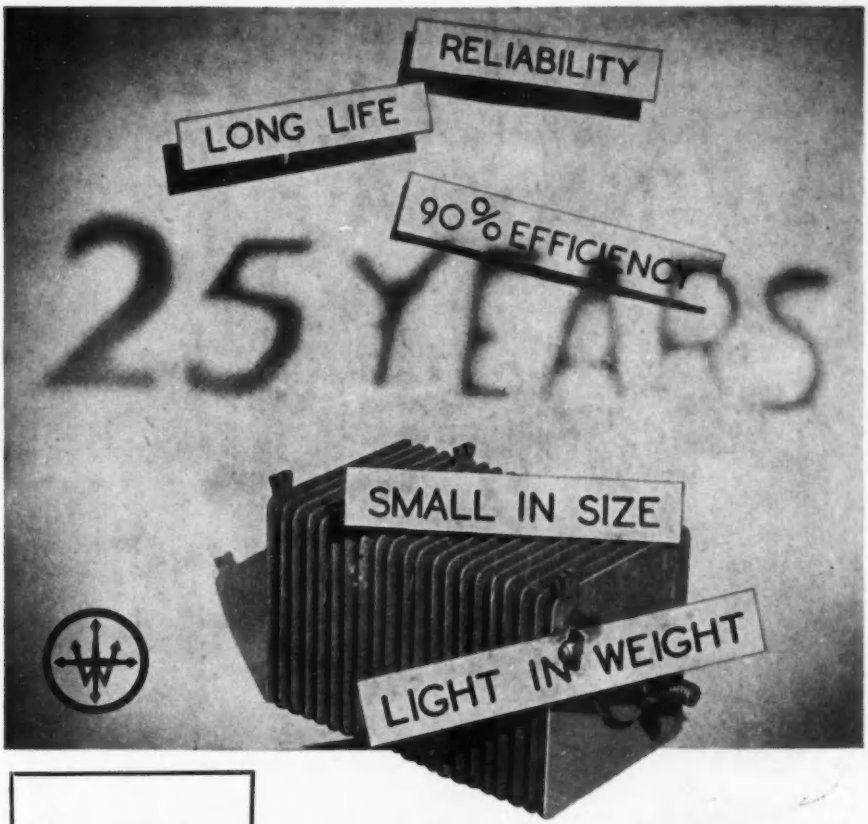

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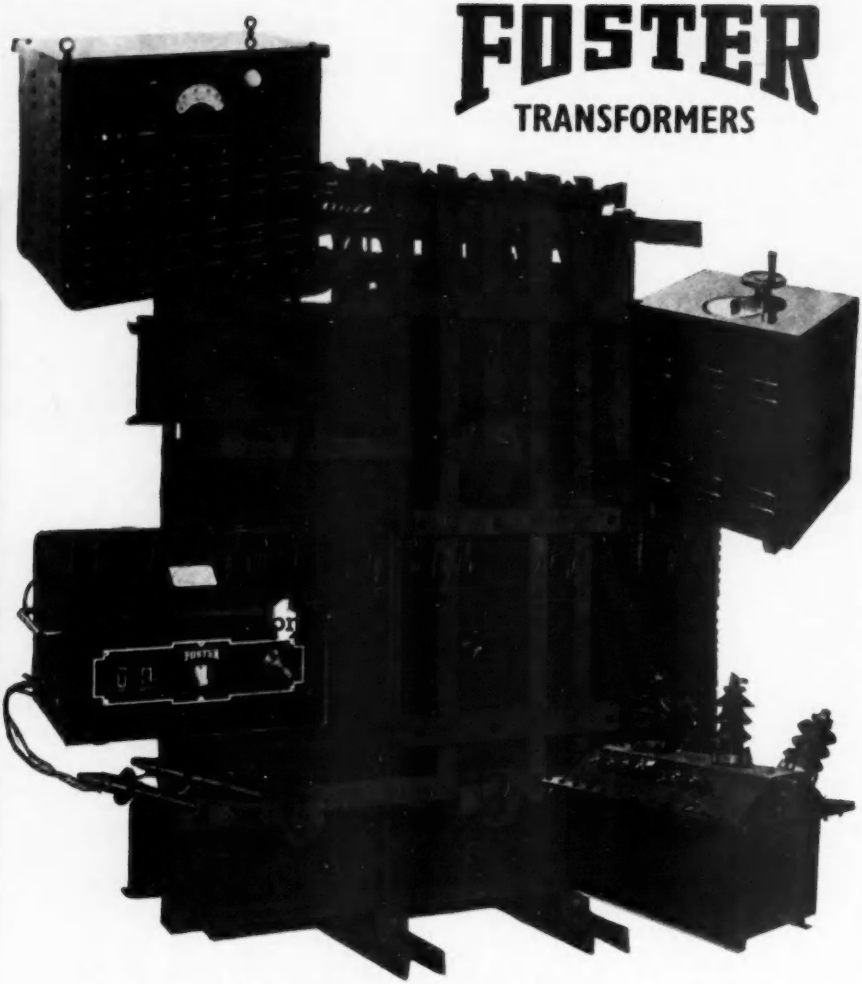

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A standard portable H.V. pressure test equipment.

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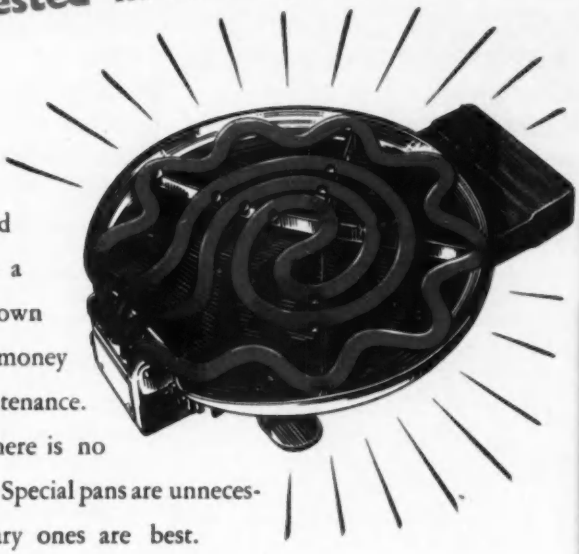

If so, you will be interested in Redrings, which give a glowing heat that cuts down cooking times and saves money in electricity and maintenance. When switched off there is no lingering wasted heat Special pans are unnecessary; in fact, ordinary ones are best.

Redrings can be supplied to fit all postwar cookers made to EDA interchangeability specification (8" and 6¼" Two Circuit and Single Circuit Boiling Plates, 10½" x 8" Grill Boiler). The majority of older cookers can also be fitted.

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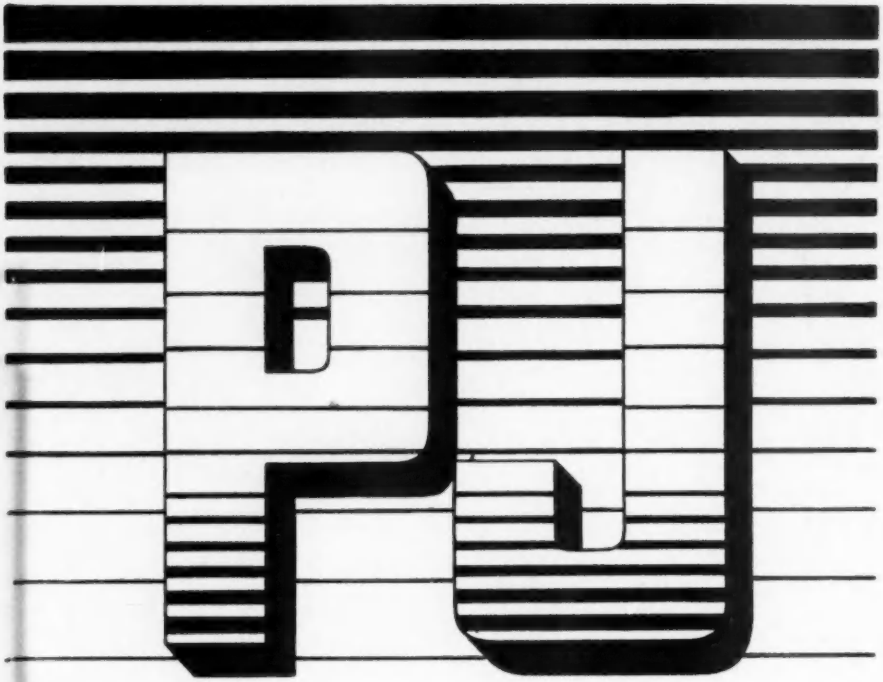

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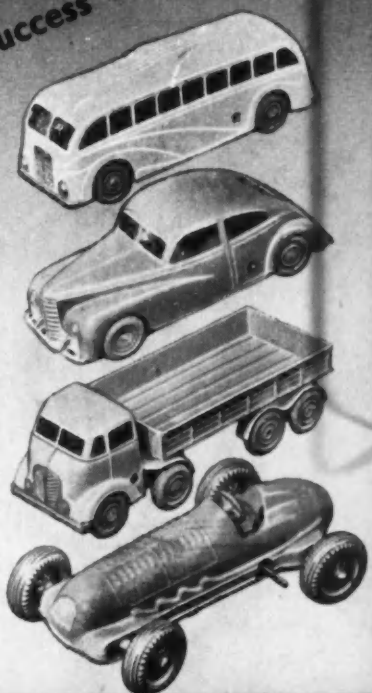

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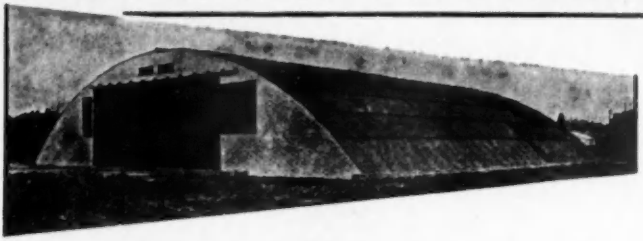

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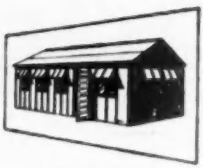

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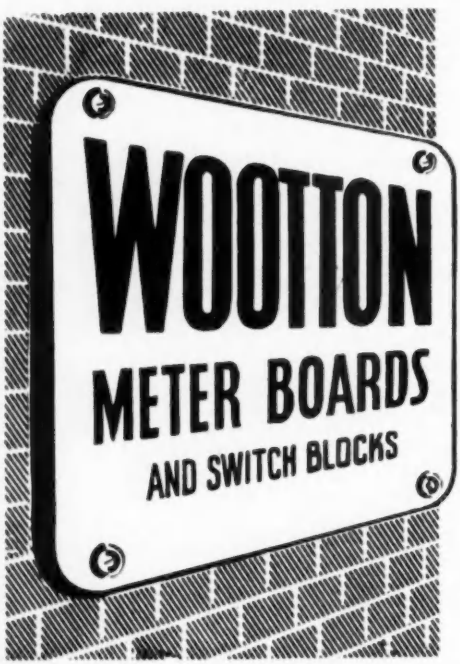

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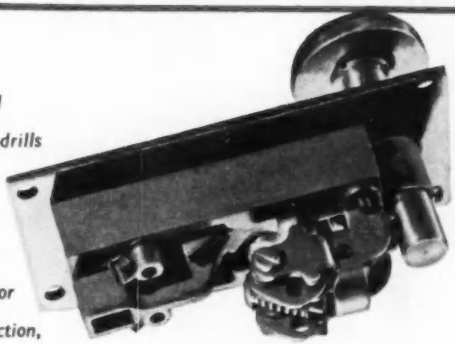

where the main point of control is some distance away from the tool, men of steel press the button and instantly the power is cut

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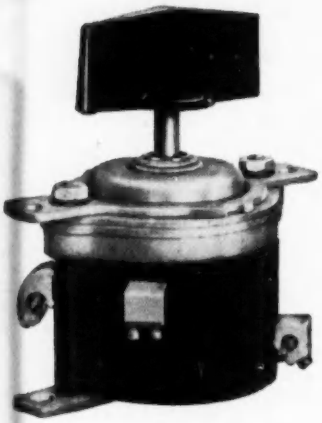

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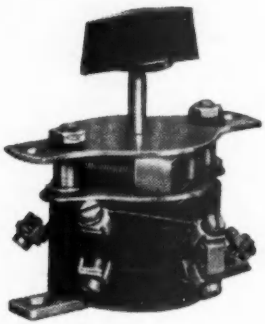

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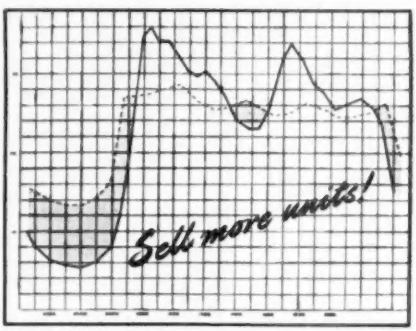

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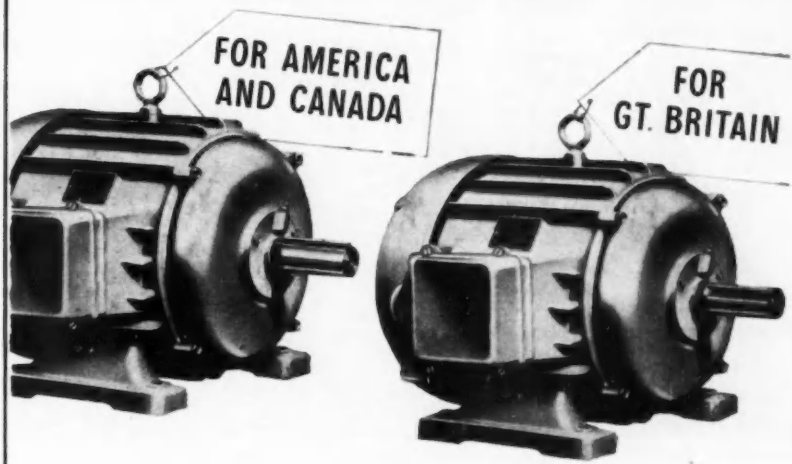

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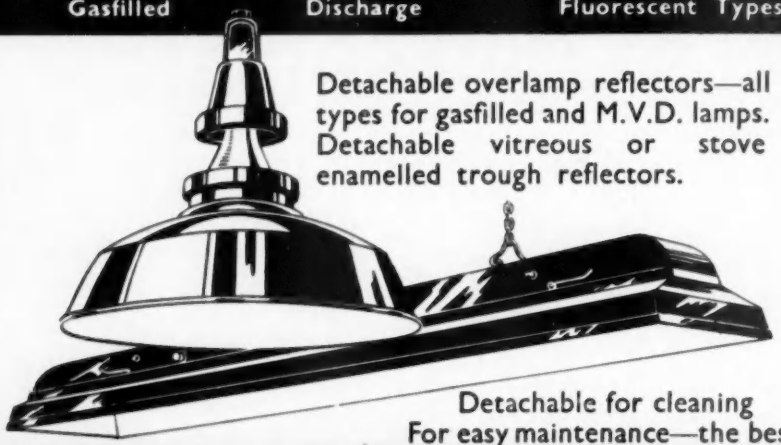

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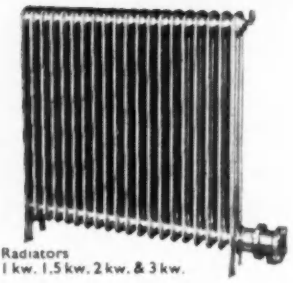

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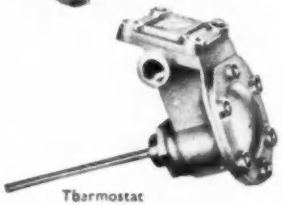
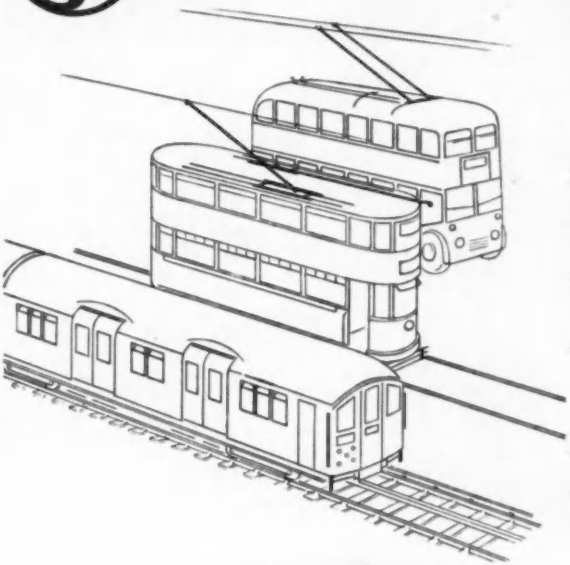


Thermostat

Electric Traction Equipment



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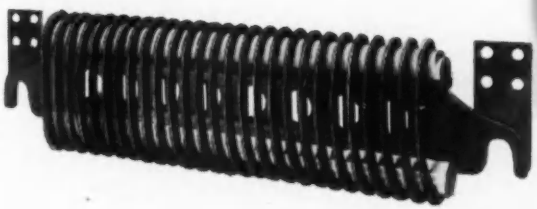

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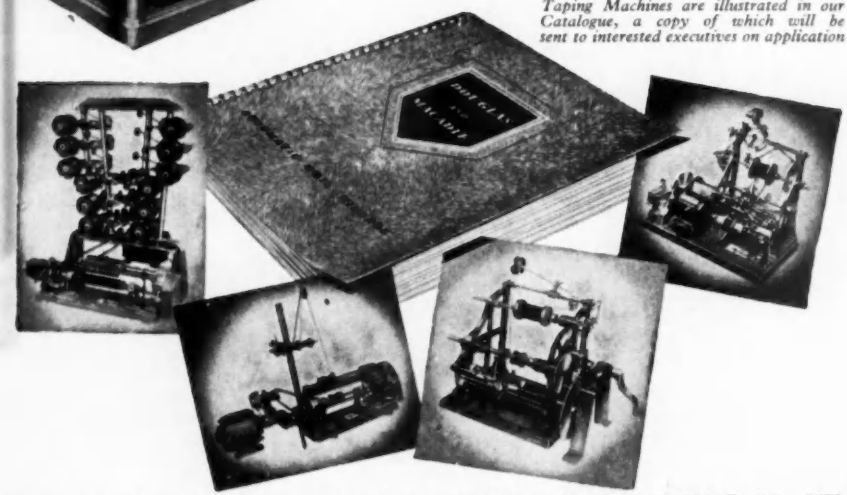

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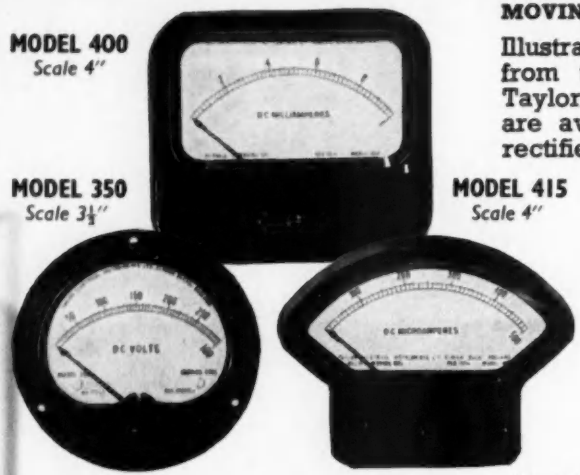

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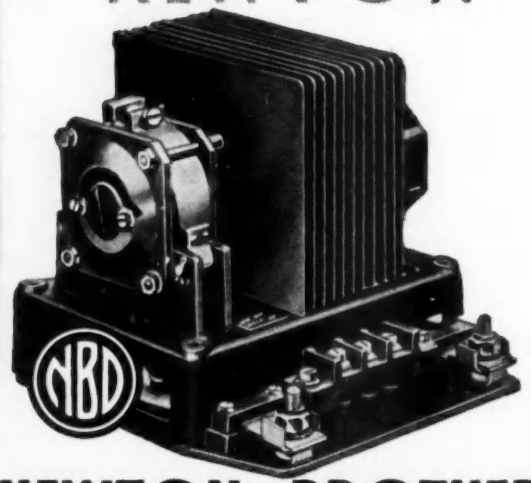

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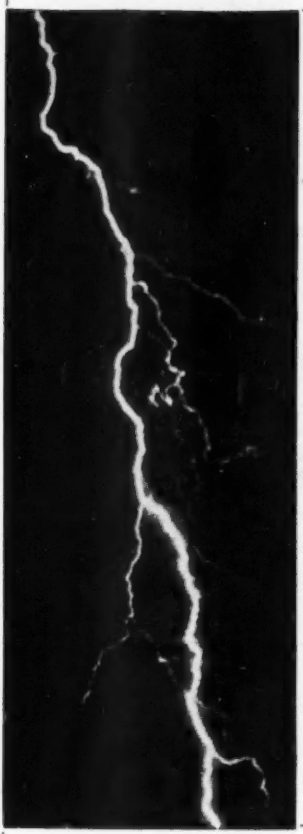

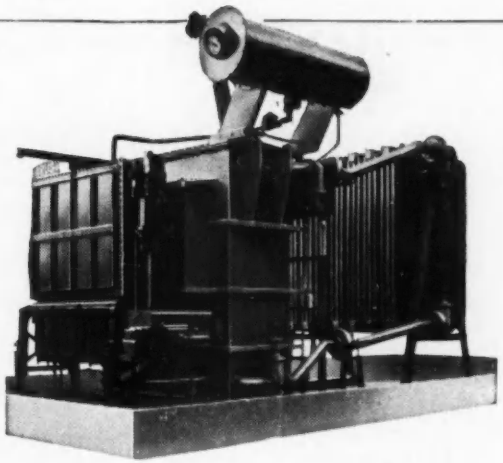

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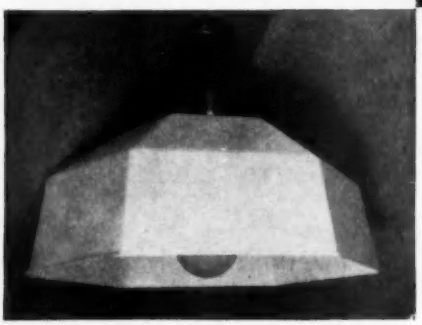

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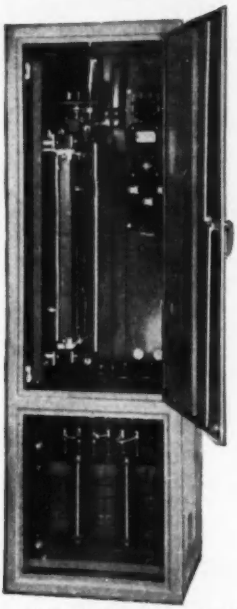

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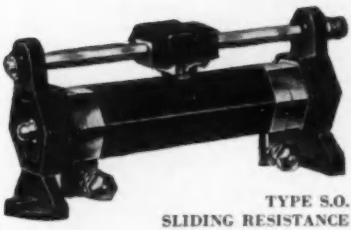

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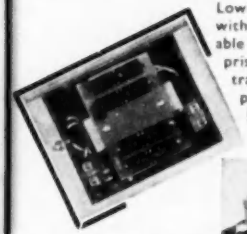

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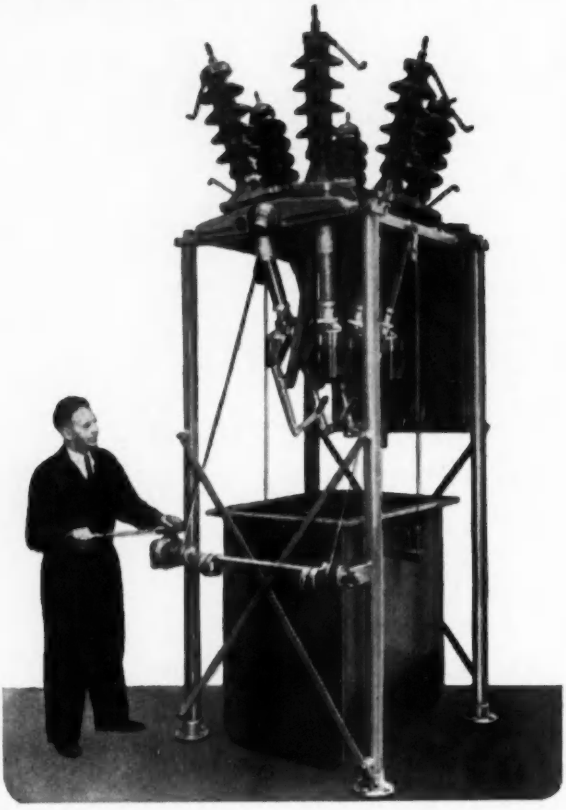

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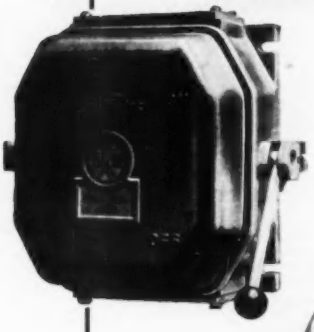

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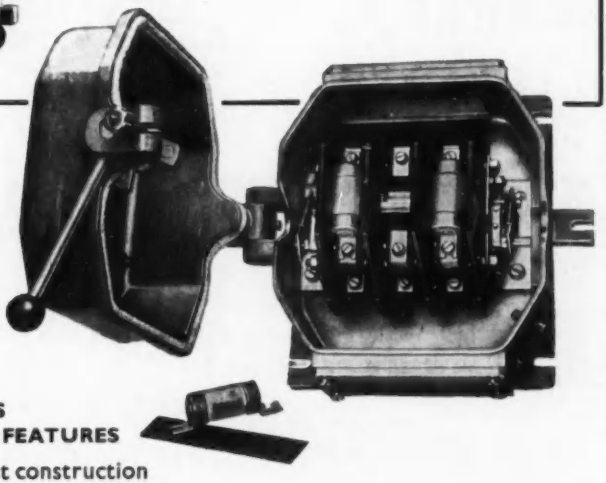

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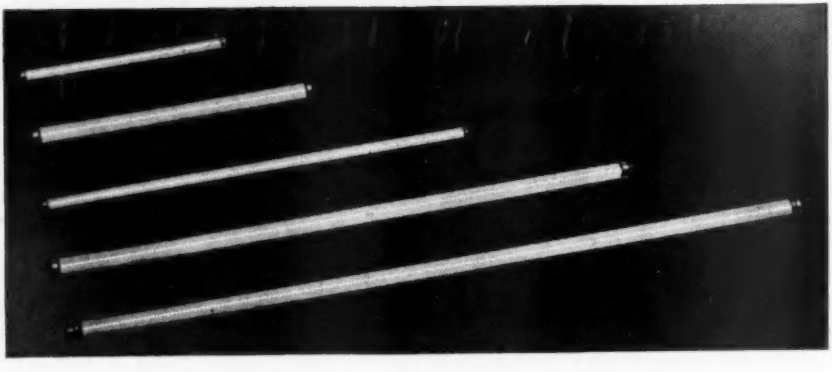

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ELECTRICAL TIMES

Vol. 117 No. 3053 THURSDAY, 11 MAY, 1950

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G.E.C.

MAIN ROAD LIGHTING *at* LOUGHTON

This illustration shows a part of the lighting installation at Loughton, where 128 G.E.C. Dioptrion lanterns using 250 watt H.P.M.V. Osram lamps are used. This installation covers approximately three miles, commencing at Buckhurst Hill, running through Epping Forest and Loughton.

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Editorial

PROBLEMS IN CAPITAL

THE announcement of the B.E.A. issue of £150 million was made too late last week for comment, if indeed comment was necessary after our note of a few weeks ago. The new loan was over-subscribed but not heavily so, which indicates a close assessment of the market's capabilities. When the terms of the loan are studied, however, they show an overall yield of £3 11s. 2d. per cent, which means that the B.E.A. will have to pay some £800,000 more a year in interest than they would have done under the terms of their last capital issue in October 1948. This may not be a serious matter at the moment, but with increasing demand for capital the rising rate of interest may well become of importance in view of the B.E.A.'s inelastic financial position. The loan also focuses attention on the inadequacy of the £700 million limit on the B.E.A.'s borrowing powers, one-third of which has already been utilised. It seems probable that over the next few years they will continue to require new money at a rate in excess of £75 million a year, so it will be well within the next six years that they must approach Parliament for a new Act to raise the limit on their maximum capital holding.

FLY ASH

THIS is not the first time that the disposal of fly ash has been discussed in these columns. Nor, bearing in mind the importance of the problem, is it likely to be the last. Elsewhere in these pages we review an experimental plant for the production of building blocks. While this development is worthy of wider adoption it is only the beginning of tackling the problem, and it seems that this is one occasion when we should do well to follow closely the work being done in the U.S. where large scale disposal is effected by mixing it with cement. Since fly ash closely resembles the volcanic ash which was used by the Romans for under-water cement, there is a good precedent for its use in dams and other large bulk structure, and in fact, Hungry Horse dam in the U.S. is taking 140,000 tons of fly ash from the Chicago area. More than 30,000 tons were used in Detroit during 1948 as a filler for bitumastic roads. It is only too well realised that transport and handling loom very large in the economics of the problem, but with a yearly output of 750,000 tons to dispose of, the matter is one of some urgency.

PRIVATE GENERATION

ONE of the outstanding papers read at the E.D.A. Sales Management Conference was that by Messrs. Gibson and Duffield on selling electricity to industry, its only fault being that it contained sufficient material for a complete conference. One feels, however, that the authors were a little optimistic in their attitude towards private generation. As a recent article on the subject showed, it is practically impossible to generalise on the comparative economics of diesel generation and to say that the diesel engine has practically been eliminated as a competitor of public supply savours of under-rating one's adversary. When saturation has been approached in the export market it seems more than likely that the diesel generator, so far from being eliminated, will make a determined attempt on the industrial load. Competitive prices of generating plant plus reasonable rates for fuel oil, might require very attractive tariffs—on long-term contracts—to counteract them. Turbines, when combined with process steam, present a more formidable problem. It is admittedly, not easy to balance steam and power requirements all the year round, but when a reasonable approximation can be made, the competition is very keen. There seems

to be something in the suggestion that Area Boards should adopt a different attitude towards the provision of a standby supply, offering a reasonable tariff instead of the prohibitive rates towards which one naturally inclines for such an unsatisfactory consumer. This would at least get a supply installed and might prove the thin end of the wedge. A prohibitive tariff, on the other hand, may mean that the consumer will install his own standby plant, so that there will be two sets to displace, instead of one.

LIVE AND LET LIVE

ANOTHER outstanding paper was that of Mr. N. F. Marsh on the sale and hire of domestic appliances, and we particularly commend his liberal attitude towards the private trader, when he points out that the main business of the Boards is the sale of electricity and service to its consumers, and not all-out sales of all types of equipment from the standpoint of direct profit. The fact that many of his audience did not agree with him was only to be expected, since this is one of the most controversial topics in the industry, not only in this country, but elsewhere. In Canada, for example, Shawinigan only sell cookers, water heaters, and some farm and laundry equipment—the remainder is left to the dealers. In Winnipeg, as an example of the other view, the power companies sell anything—even gas appliances. There is room in this country for a "vigorous sales policy" if it is directed towards the primary object of load-building. But, if we value our goodwill and good name, we must guard against a temptation to open an indiscriminate merchandising war against the retail trader; pretending, the while that we watch our mounting turnover, that we are only performing a "service to the public."

HOUSEWIVES' CHOICE

ON the question of the design of cookers which are intended for hire purposes, we find ourselves unable to agree with the opinions expressed by Mr. Marsh. It is bad enough for a manufacturer to have 296 variations on a standard cooker (as was instanced in another paper) without having to build a special model for hire purposes which is deliberately made old-fashioned in appearance. Although there is a lot to be said for the author's point that if cabinet cookers are supplied for hire, existing hirers will want to change, he estimates that the cookers he is now putting in will still be in service in 15 years' time. Are we to continue the old-fashioned appearance for ever? The change-over will have to be made some time and it might as well be made now, when manufacturers, in deference to the views of the ultimate consumer —the housewife—are trying to drop the legged model cooker. Most boards, it is true, do not want hire business, but competition from gas may force them into it, and we may as well learn from the mistakes of our competitors. If the gas companies themselves had not hung on so long to the old-fashioned black cooker their competition today would be even more formidable than it is. We shall not beat them by falling into an error of the same kind.

SCARE ON H.P. CAPITAL

SOMETHING of a sensation was caused at the Sales Management Conference by a statement that one Area Board was considering the suspension of hire purchase schemes, following the capital cuts. While this is presumably envisaged as an alternative to cutting down rural development, we consider that its effect would be disastrous to the expansion which the industry must have if it is to prosper. However, apparatus on hire purchase hardly comes within the definition of capital goods for the purposes of the Economic Survey. Further, should not such annually recurring items of expenditure be commonly dealt with apart from the capital account? The Electricity Commissioners' ruling of 1927 is a sound precedent to follow; it permitted certain regularly recurring capital expenditure to be charged to revenue, but only when the undertaking had a reserve fund of at least 5 per cent.

Meteor

Can Fly Ash be Profitable?

Ash from Leicester p.f. furnaces makes good quality building blocks

FLY ash is usually an unmitigated nuisance on pulverised fuel power stations—but not at Leicester. There, at the Freemen's Meadow generating plant of the East Midlands Division, good use is being made of this undesired by-product in all types of building construction requirements.

Pulverised fuel ash varies considerably in fineness and composition with the type of coal burnt, the furnaces, and the method used for ash recovery. Generally, it consists of nearly spherical particles of fused ash, mostly solid but sometimes hollow, and always very finely divided. It is this fineness of the dust that makes disposal difficult and complicates the problem of finding a useful application. Building materials are the obvious outlet, but the crushed stone and clay which the ash from p.f. boilers might replace is usually cheap and plentiful. However, at Leicester a technique has been developed which gives a building block at a relatively low price, possessed of many attractive qualities.

The story behind this achievement begins in 1934, when Mitchell Engineering Ltd., who had met the problem of p.f. ash disposal very frequently in their ash-handling experience, set up a laboratory to study the possibilities of using fly ash in the manufacture of building materials. After many tests a solution of the problem was found in the form of a chemical binder, which when mixed with fly ash and with a small quantity of cement gives a strong but light material which can be pressed into shape as a building block or can be cast into any shape desired to be used anywhere in the construction of buildings. Leicester Corporation co-operated with Mitchell Engineering Ltd., and since 1944 a small factory has been operating within the station grounds at Leicester for the manufacture of building materials in various shapes.

Freemen's Meadow operates with International Combustion p.f.-fired boilers, which are fitted with Lodge-Cotterell electrostatic precipitators. The fly ash is conditioned at the outlet of the precipitator by the addition of about 15% by weight of water, and is then loaded from the precipitator hoppers on to lorries, which cart it to a disused granite quarry, where it is dumped. Handled in this way, disposal of the ash costs about 10s. ton and in many cases valuable sites have to be purchased and laid waste by the ash which is deposited on

This coal conveyor at Freemen's Meadow is partly built of blocks made from the station's own fly ash

it. The total cost of such installations for the disposal is very heavy.

Manufacture

Ash required for block-making is carted by the lorries to the manufacturing company, Vitreous Concrete Ltd., to the nearby factory building. Here it is mixed with a chemical binder and 10% cement in concrete type mixing machines and taken on a conveyor to the presses or poured into moulds. At present hand loading is used for the presses, and the mixture is also tamped down by hand. Plans are prepared for automatic loading and press operation, the Leicester factory being in the nature of a pilot plant. Some variation in the binder composition with the type of coal burnt is required, but apart from the determination of this, most of the work in the factory is relatively unskilled.

After extraction from the presses, blocks are stacked to allow free circulation of air between them, and then placed in steam-heated ovens for a drying period. The final stage in the manufacturing process consists in stacking the blocks in the open for a period to season.

Application

After this treatment the blocks are ready for use, and tests conducted by various authorities, including D.S.I.R., have proved them to have strength comparable with traditional materials and a fire resistance exceeding most. In particular, the properties of the M.L. building blocks (a contraction of the registered trade mark "Melcrete")—the name is adopted by the company formed to manufacture them, Vitreous Concrete Ltd.—are far superior to those of breeze blocks, with the better qualities of which product the blocks compete in price.

When seasoned, the blocks have density of only 78 lb/cu ft, about that of light-weight aggregate concrete, and an 18 in. × 9 in × 3 in. block will safely withstand a load of 20 tons on the 18 in. × 3 in. face. Large scale tests with the blocks used in the lining of high pressure boiler furnaces have proved that, at temperatures up to 2,000° F, the M.L. material does not lose its texture or shape. With a thermal conductivity of only 3·2 B.Th.U./sq. ft./hr. 1 in. thickness for 1° F. difference of temperature (0·0011 c.g.s. unit) the M.L. block is obviously attractive for its heat insulating properties.

Apart from these advantages, there is the fact, important to the builder, that the blocks are smooth on all six sides, and so can take paint or distemper without preparation. They can, however, be manufactured keyed for rendering or plastering.

The plant at Leicester was purposely arranged as an experimental station to prove the possibility of using fly ash in a vast number of ways, and the widespread experiments with M.L. blocks by architects in the Midlands have proved this material to be entirely satisfactory.

The Ministry of Works have also approved of their use, and have included them in several buildings for which they have been responsible. In the Bletchley and Rushden new housing schemes there are over 100,000 M.L. blocks built in as fire-resistant party walls.

At Freemen's Meadow the versatility of the material has been demonstrated by its use in the 500 ft conveyor bridge running from the coal dump to the new boiler house. The sides of this structure, seen in the illustration, are of imitation weatherboard, cast from M.L. blocks, and have proved in every way satisfactory.

Though the conversion of fly ash into building products may not consume the whole output of a station, the profit made from the sale of blocks may subsidise the expenditure on dumping the rest, and so have the same effect on economy as a reduction in the price of coal.

We have to thank Mr H. D. Watson, M.Inst.C.E., M.I.Mech.E, A.M.I.E.E., M.A.S.M.E., Chief Technical Engineer, Mitchell Engineering Ltd. for assistance in obtaining the information on which this article is based.

I.E.E. WIRING REGULATIONS

Twelfth Edition principally a Rewrite

AFTER being revised in 1943, and reprinted with minor amendments in 1945, the eleventh edition of the I.E.E. "Regulations for the Electrical Equipment of Buildings" was further modified by several important provisions published as a supplement in 1946, and by the new version of Section B (Discharge Lamps) which was issued as a matter of urgency in 1948. Thus the time was ripe for a consolidated new edition, and the responsible I.E.E. committee are to be congratulated on successfully assimilating all these changes into a consistent code, the new twelfth edition. This smoothing out of the text, results in a readier understanding of the requirements and is a valuable advance. Changes effected by the new edition are mainly concerned with detail, but some are of considerable importance from the contractor's viewpoint.

As part of their work of clarification, the wiring rules committee have added a new regulation 2 in the General Section, setting out the general principles on which the specific requirements are based, and this should be of value in interpreting individual regulations. New changes made where appropriate throughout the regulations include provision for the use of p.v.c. cables in most positions where rubber was mentioned before, and attention is paid to the use of aluminium as a cable sheathing material in place of lead.

Detailed Changes

The detailed changes effected by the new edition are described in the table accompanying this article, and it is only proposed to deal here with some of the outstanding alterations. Amongst these is the reintroduction of the "extra-low-voltage" category which was last included in the tenth (1934) edition, and which covers circuits operating below 30 V r.m.s., a.c., or 50 V d.c. For these, cable insulation may normally be light and earthing omitted.

An important general change of principle concerns excess current protection. The principle originally enunciated in regulation 110, that " . . . every circuit and sub-circuit shall, except as prohibited . . . be protected *on each pole* by either a fuse or a circuit breaker," has been modified by omitting the words in italics and the exemption clause. The requirements for protection in both a.c. and d.c. circuits are now explicitly stated.

A change that will have some effect on portable appliance design and on radio interference suppressor technique has been made in the earthing requirements, where double insulation is now accepted as an alternative to the earthing of metal parts, subject to specific approval by the I.E.E. of the relevant British Standard, with the safety clauses of which the appliance concerned must comply. Another small change which, if strictly obeyed, may produce an important alteration in practice, is the addition of a new clause, 612 (E) forbidding the use of reversible plugs or connectors with portable appliances which incorporate single pole switching. Previously the use of reversible two-pin plugs had only been "deprecated" in a note to clause 1001 (B).

Electrode Boilers

The one overall change in requirements to be found in the regulations applies to electrode water boilers. In place of the former single regulation 711, there are now four regulations applying directly to the subject, 711 to 714, these dealing with general requirements, h.v. units, three-phase medium and low voltage units and single phase units respectively. The overall prohibition on connection of the shell to the supply neutral is now removed, but the clause concerning over-current protection devices on each circuit breaker has been strengthened to require them in each conductor feeding an electrode.

For h.v. units, balanced type earth leakage protection is required, and metal work must be connected both to the armouring, if any, of the supply and to earth. With medium and low voltage three-phase boilers and heaters, in addition to the above earthing requirements, the shell may in certain circumstances be connected to the system neutral conductor, and when this is done, balanced-type earth-leakage protection is no longer required. For single-phase units, with one electrode connected to an earthed neutral, balanced-type e.l. protection is again required, except when there is no connection between the electrodes and any piped water supply or earthed metal, and the electrodes and water are suitably shielded. In these circumstances the circuit-breaker required by regulation 711 may be omitted, and a fuse in the phase conductor substituted.

The number of British standards referred to in the regulations has increased to more than 80 compared with 61 in the 11th edition. Most of them are the subject of mandatory requirements in Section 13. A new departure is the mention of British Standard Codes of Practice, which are the subject of comment in the preface to this edition. It is pointed out that these in no circumstances "countenance a practice less desirable on grounds of safety from fire and shock than that required by the regulations, though they may on occasion go further, selecting one of a number of methods approved by the regulations and recommending it as the preferred practice." Two codes of practice are referred to in notes to the regulations.

One new table has been added in the 12th edition, dealing with the rating of intermittently loaded v.r., paper, and v.c. insulated cables on a half-hour and one-hour basis. The half-hour rating factor varies from 1·02 for 7/·052 in. cable, up to 1·74 for 127/·103 (1·0 sq. in.) and may permit considerable economy.

Throughout the tables the "approximate length in circuit for 1 volt drop" is now given in terms of length of run instead of "length of cable, go and return," and the figures appear to have been recalculated.

Behind the tables, a new Appendix 4 is to be found, setting out the I.Civ.E. Regulations for Controlling the Earthing of Electrical Installations to Metal Water-pipes and Water-mains.

Finally, an omission. The old Section 9, dealing with mains-operated apparatus for radio, acoustic and visual reproduction has apparently been considered redundant, and has disappeared from the Regulations.

Differences between 11th and 12th Editions of the Wiring Regulations

Subject and number of old Regulation	*Change in Regulations*
Cable sheathing and covering.	Provision is now made throughout the regulations for both p.v.c. and aluminium as cable sheathing.
Main fuses 105	Consumer's main fuses may be omitted when consumer's service unit is in use: also, now, when there are not more than 8 fused ways, each not greater than 30 amp, totalling 60 amp or less. There is now no mention of maximum value of lighting load.
Fuses and circuit breakers. 110	Provision in each pole is no longer a basic principle of Regulations.
Size of conductor, fuse and circuit breaker. 116	Cable current rating now to be "not less than one-half the operating current" of its protecting circuit breaker. Earth leakage trip on circuit breaker no longer required where circuits are tapped off.
Single-pole switches. 115	Position now restricted to phase or outer conductors in 3 or 4 wire installations.
Separation of circuits exceeding 250 V. 117	Socket outlets in a room of floor area less than 500 sq ft must now be connected to same pair of supply cables.
Final sub-circuits. 201 B	A footnote now draws attention to need to keep down the number of points supplied by a single final sub-circuit.
Ring mains. 201 C	Ring main principles may now be applied to industrial installations. Number of socket outlets permissible is increased from 4 to 6. Number of socket outlets served by spurs from a ring main is not to exceed those served directly.

Subject and number of old Regulation	*Change in Regulations*
Conductors of cables. 301	Switchboard wiring and bare soil warming leads now exempted from compliance with table sizes.
Current rating of cables. 302	Permission is now given to uprate intermittently loaded cables.
Earthed concentric wiring. 305	Earthed concentric wiring is not now restricted to installations supplied from private generating plant.
A.C. cable colours. 311	Phase conductor colour may now be used in two-wire system up to final distribution board. The use of particoloured cables is now no longer permitted on 4-wire systems.
Selection of runs. 315 (F)	The minimum radius round which paper, jute or varnished cambric insulated cables may be bent is increased to 12 times the overall dia. of the cable (from 8). Cables may not now be run in ventilating ducts, unless these are specially designed to permit this.
Joints in flexible cords. New 316	New clause. Shrouded mechanical connector to be used, or, where plug and socket is used, socket is to be on supply side.
Cables unlikely to be disturbed. 403, 404	Maximum distance between supports is fixed at 3 ft. (was 10 ft.). Cables running parallel to joists are to be attached to the sides of the joists. When cables are sunk into floor joists, the floorboards shall be fixed with removable screws.
Aluminium cables. New 403(H)	New clause. Metal joint boxes for aluminium sheathed cable must be of aluminium or aluminium alloy.

Subject and number of old Regulation	*Change in Regulations*
T.R.S. or p.v.c. sheathed cables 404 (D)	Continuous binding-up with a properly supported catenary wire now included amongst alternatives to conduit enclosure. *Every* connection between cables now to be made with a B.S.816 joint box.
Conduits. 405 (G)	Specific restriction on filing or cutting conduits in order to form outlets for cables has been removed. A new form of paragraph F, however, states that except as specifically exempted, boxes shall be provided at every outlet position.
405 (N)	The running of d.c. go and return cables in separate conduit is prohibited.
405 (P)	Requirement for tinning inner surfaces of conduits carrying taped and compounded cables has been withdrawn.
New 405(P)	New clause. Adaptors for connecting flexible metal tubing to metal conduit must have provision for connecting, also earth continuity conductor.
Cable duct systems. New 406(B)	New clause. Metal junction boxes, including inspection covers, duct outlets and other accessories all to be effectively earthed according to requirements of Section 10.
Soil warming. New 414	New clause. Bare wires to come from secondary of double wound transformer. One point of secondary to be earthed, voltage nowhere to exceed extra-low voltage.
Flexible cords. 509	Braiding and compounding no longer accepted as protection against mechanical damage.
Socket outlets & plugs 603 (E)	Controlling switch is now required to be "immediately adjacent" to a socket outlet in a d.c. circuit.
New 608(K)	New clause. Reversible plugs or connectors not to be used to connect switched electrical appliances to the supply unless every switch on the appliance is of the double-pole type.
Fuses. New 612(E)	New clause. Every fuse to be of a type suitable for the system of supply in use, and its voltage rating to be not less than the maximum voltage that can occur in the circuit protected.
Control of heating and cooking appliances. 701	Requirement for feeding portable cooking and heating appliances from an adjacent socket outlet now limited to those rated at 3 kW or less. Appliances not fed by a flexible cord may have the controlling switch or push-button mounted on them, subject to certain internal wiring requirements being met. Non-luminous luminous heaters in non-domestic premises need not be controlled by a switch or push-button in the same room. For a bathroom appliance any switch or push-button required may be placed outside the room. Thermostatic control devices may be placed in the neutral conductor.
Protection of motor circuits. 704 (C)	Excess current protection for motor circuits is now required to "provide satisfactory protection for the motor and motor cables when the motor has run up to speed."

Subject and number of old Regulation	*Change in Regulations*
Auto-transformers. 708	Auto-transformers may now be used in conjunction with electric discharge lamps operating at voltages above 500. Auto-transformers may now be used to supply portable appliances operating at above 110 volts.
Electrode water heaters. 711	Clause completely re-written. See separate notes in accompanying article.
Garages. 716	Appliances not totally enclosed may now be fixed at 4 ft above floor level (was 4 ft 6 in.).
Electric discharge lamps. 854	Auto-transformers up to 1 kV may be connected in an a.c. 2-wire circuit, one pole of which is connected to earth.
Installing mains-operated apparatus. Sec. 9	Section now removed from regulations.
Earthing. Sec. 10	Need for keeping lightning conductors away from thatched roofs, etc., in some areas now emphasised.
Metal to be earthed. 1001 (A)	Metal sinks in kitchens containing electrical appliances added short isolated lengths of catenary wire added to exemptions. Exemption of metal work more than 8 ft. above floor level is removed. Metalwork included with extra-low-voltage circuits is exempted from earthing requirements.
1001 (B)	Double insulation is recognised as an alternative to earthing on certain B.S. appliances.
New 1001(E)	New clause. No provision shall be made for the use of portable appliances in a bathroom.
Earth continuity conductor. 1009	Effectively new clause. Flexible metallic tubing not to be used as an earth-continuity conductor. Catenary wire supporting cable must have low resistance or be bonded to separate earth-continuity conductor at regular intervals.
Systems of earthing. 1005	When supply authority *provides* earth terminal or *permits* connection to a lead cable sheath that *shall* be used as the earth electrode of the installation. The earth electrode in other cases must allow passage of a fuse-blowing current where practicable, *otherwise* earth leakage protection must be provided.
Earth leakage protection. 1006	An earth leakage device is now required to operate "on the occurrence of an earth fault." Exemptions from the fitting of such a device is extended to certain types of electrode boiler.
Earthing leads. 1008 (D)	B.S.951 earthing clamps now obligatory where connection of earthing lead is to metal pipe having internal diameter of 3 in. or less.
Testing. 1102 (B) 1104 (B)	Separate tests required when total installation insulation resistance is less than 0·5 megohm.
Test of ring circuit. New 1106(A)	New clause. Ring circuit continuity test required.

Our readers' views . . .

Advertising of Vacancies

I SEEM to recall, in the early days of nationalisation, several statements to the effect that it was intended for all vacancies to be advertised, but as far as I can gather it seems that the general practice in force is for each Board to advertise the vacancy internally and only in the event of their being unable to fill the vacancy does it appear in the technical press.

During the settling-down period, I suppose there was much to commend this method, but now that Vesting Date is more than two years ago, I should have thought that establishments would have been completed, and that the time is now ripe for *all* vacancies to be advertised nationally.

I am sure all personnel in the Industry who are desirous of making progress will support this plea, and it would be interesting to have some observations from the more prominent members of the Industry.

On this point, I was interested to see an item in the "Personalities" column of your issue of April 13, announcing the transfer of a District Commercial Officer from the Southern Electricity Board to the Midlands Electricity Board, and as this is the type of job I personally am interested in, I am wondering how this came about, without any advertisement appearing in the Press.

Nomad

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Low Voltage Apparatus

OUR attention has been called to the article by "Megohm" on page 636 of your issue of April 20. Under "Garden Equipment" he states, "At a recent exhibition of the latter-labour-saving device (hedge clipper) I asked for a demonstration, but before the vendor could oblige he had to renew, or rather shorten, the t.r.s. flex, as the preceding 'prospect' had almost cut it through by getting it entangled in the oscillating knife-blades."

So far as we are aware we are the only manufacturers of a hedge cutter with an oscillating blade, and we would call your attention to the fact that ever since we produced this machine we have educated our customers to use it only via a double-wound transformer with the centre-point of the secondary tapped to earth. You will appreciate that consequently the user is subject only to a maximum shock of 55 volts, which we feel you will agree is rarely likely to be dangerous.

We do not know to which exhibition "Megohm" was referring, but we think it unlikely that the machine shown to him was operating otherwise than via a transformer, and it might have made for fairer comment had this been mentioned in the article.

We would mention also that we have produced a 12-volt machine which can be operated from a standard car battery, which entirely eliminates any danger to the operator.

We would request you to give our reply to this article prominence in an early issue of your paper.

E. A. A. Kynaston

TARPEN ENGINEERING CO., LTD.

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Commercial Engineers

MR. RICE in his letter in your issue of April 27 tries to impress me with the importance of his duties as a consumers' engineer, but I can assure him that I am no chicken in the industry and that I have a fair knowledge of the commercial side. I have no doubt that I could refer Mr. Rice to offices where highly technical problems are dealt with quite as effectively as they are in his office.

I did not say, as suggested by Mr. Rice, that his duties were *only* "sales of apparatus and quick profits." What I did say was that commercial officers are biased in favour of sales of apparatus and quick profits.

I am well aware that there are a number of first-class engineers on the commercial side just as I am also aware that there are some distribution engineers who are first-class commercial men, but Consumers' Engineer stated in his letter which was published on March 23 that consumers and distribution engineers are both *equally* necessary for the efficient working of a supply undertaking. "Equally" was emphasised by the use of italics by Consumers' Engineer. I still say that the distribution engineer is the more important. It will be seen on reference to the 1947 Electricity Act that the

main functions of the B.E.A. are to develop and maintain an efficient, co-ordinated and economical system of electricity supply for all parts of Great Britain except the North of Scotland District. There are no ifs or buts about this. It is the B.E.A.'s duty. The distribution engineers must come into the B.E.A. organisation to help carry out the main functions of the authority. I say that commercial officers are not so important in carrying out these main functions as are the distribution engineers.

The authority has powers to manufacture and sell electrical apparatus but is not compelled to do so.

Further, I would say that it is doubtful whether the commercial side pays its fair share of expenses. If Mr. Rice is a good commercial officer he should be able to tell us what the total cost of his staff is, what proportion of space is occupied by that staff, the space occupied in the stores by his stock and the rents and cost of maintaining showrooms, the cost of transport for his department, and other incidental expenses. I challenge Mr. Rice to prove that his department is paying its way if it bears its correct proportion of costs.

I would also say that the commercial side is responsible for delays in arriving at decisions which vitally affect the supply side of the industry.

It would be an advantage to have commercial officers in the industry, provided they looked after the commercial side only and paid their correct proportion of costs. What we have got, however, is a commercial side which is seeking to dominate the supply engineers and if continued this is bound to lead to friction.

Let us have co-operation but with both sides sticking to their own jobs and doing them well. One thing that your correspondents are agreed upon is that none of us in the supply industry is overpaid.

"Carry on"

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Sales Without Service

IT is with interest I read regularly the notes by "Megohm." I think that the electrical retail trade is the most abused of all. It is bad enough to have chain stores, ironmongers and tool shops selling shoddy appliances, but I think an even greater abuse is from one of our leading manufacturers, who seems happy to peddle their goods to any old Tom, Dick, or Harry who will sell them. To me it seems that no matter how good the quality, if the person using or installing has not the know-how, then the danger is just as great as with shoddy appliances.

I think it pretty general that most electrical tradesmen do ask the whys and wherefores and advise before making a sale. Not so the others, and I know from experience that if the tradesman puts a customer off they will often go to the nearest ironmongers to buy the same article.

I should say that at least half the wireless shops are not even fit to sell appliances, much less do the bits of extra wiring. Now comes the big laugh. The plain Electrical Contractor cannot buy a, shall we say, ring wireless at trade, unless he calls himself "Radio Engineer." But the ironmonger, harness maker, barber, etc. can buy all the appliances he wants from at least one leading manufacturer. I think it is time for the trade to do something about it.

E. Emery

SAWBRIDGEWORTH, HERTS.

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B.S.I. and Accessories

IN your issue of April 20 reporting the discussion at The Institution of Electrical Engineers, opened by Mr. Stanley on "British Standards for Accessories," you report me as saying "the plastic shade ring should be excluded" in connection with B.S.52 Lampholders. The report is incorrect. What I recommended was that the plastic covering around the bayonet portion of insulated lampholders should be done away with together with its thin metal reinforcement, and replaced by a brass insert comparable with an all-brass lampholder.

F. C. Fuke,
M.I.E.E.

LEATHERHEAD

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False Security

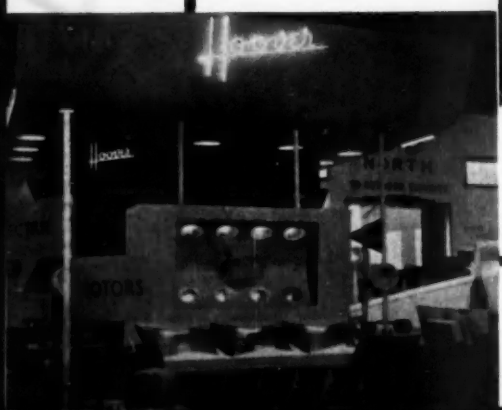
YOUR letter from Chartered Electrical Engineer rather smacks of a cheap line in publicity, and also to belittle the position of the contractor in the industry.

We are all aware that the man who never makes a mistake is the man who does nothing at all, but if a person of such standing as C.E.E. considers that his grievance should be aired, he ought at least to be bold enough to append his name.

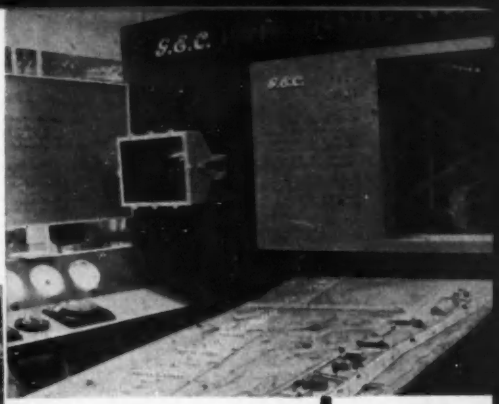
Henry Mansfield

KENDALLS LTD., DAWLEY, SHROPSHIRE

Showmanship at Birmingham



Striking stand designs and colourful displays attract the overseas buyer at this year's B.I.F.



Problems and Practice

IN ENGINEERING

Communications Can Help

THE job had been done during the war, and like a lot of these jobs, had been done in a hurry. It was a simple push-button fire alarm system installed in a Government hostel, serving 20 "dormitories" from a position in the administrative section. A "ring" system was employed, and the cable was multi-cored p.i.l.c. run on catenary wire stretched between poles. At suitable points, distribution boxes were erected on the poles, and these were the cause of the somewhat chaotic conditions that existed when I was called to examine the system. These distribution boxes were non-weatherproof type, and to make matters worse the paper-covered wire had been taken right into the box. Water had played havoc with the insulation inside these boxes. Testing was further complicated by the fact that inside certain lead sleeve joints in the cable, no trouble had been taken to keep the colour correct. When we began testing, we found that we were making little headway, due to the fact that having to check progress and correct misunderstandings, etc., we were doing more walking than testing!

The result was that I had two telephone sets made, incorporating hand micro-telephones and dry batteries. One of these was placed near the 20-way indicator, and the other was carried outside and hung on the particular box being tested. We found a "good" wire and used the lead sheath for "return." Testing proceeded sweetly after this, and the novelty—to us, anyway—made us almost sorry when we had made the job right. I have since used them on internal bell circuits, and have noticed many a "situation," both in electrical and mechanical engineering, where the introduction of a simple two-way telephone would be a great boon.—*J. W.*

Bells and Indicators

I RECENTLY came across one of the more awkward types of wiring, namely low voltage bell and indicator systems of the older type. It was in a hotel and concerned the call system for the staff at the main hall indicator board. Like so many similar installations, the original number of bells had been progressively increased through time, until now the various members of the staff had difficulty in distinguishing the different tones at a distance, and were often needlessly called to the indicator board. To save so much unnecessary travel, my job was to rearrange the circuits and reduce the number of bells required to a minimum.

This was accomplished in most cases by normal wiring practice, but when it came to the floor service indicators for room maids, this was found to be impracticable, as follows. On each floor there were three bell and manual replacement indicator groups, each group working in conjunction with a bell and swinging indicator at the main hall board, so that the maid concerned would know, if she were on the

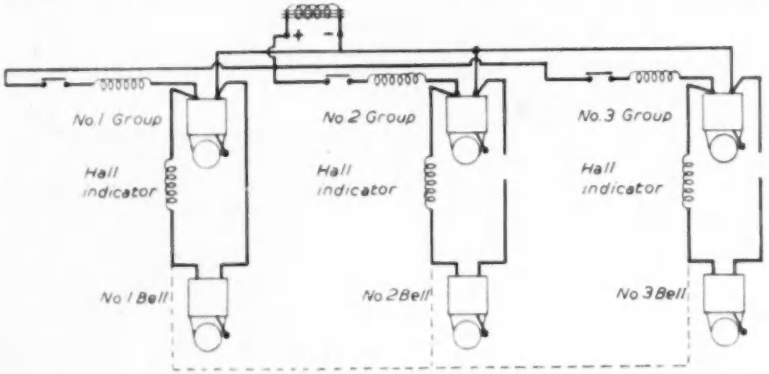


Fig. 1. Original connection of hotel room bells and indicators

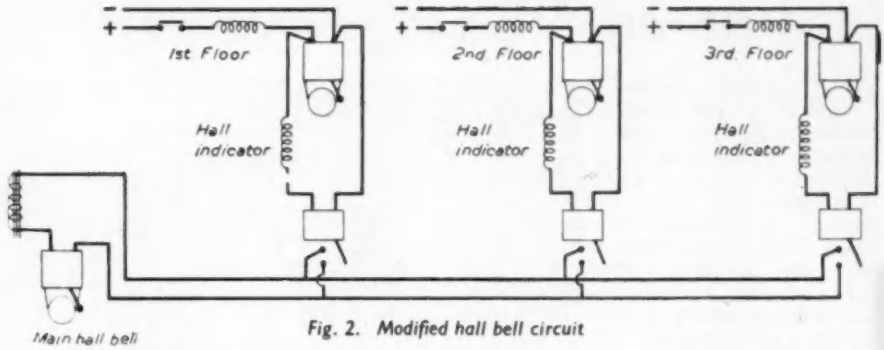


Fig. 2. Modified hall bell circuit

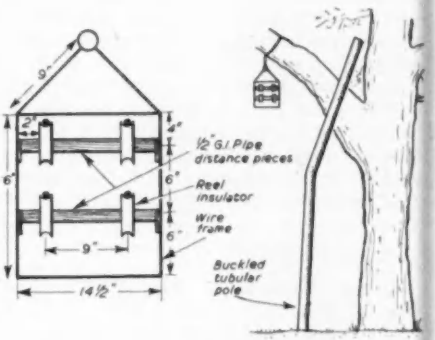
main floor. Each floor system was supplied from a separate transformer at 12 V, and the wiring of one floor group (showing one push circuit only) and its main indicator is shown in Fig. 1. To have one bell for the three floor groups and three main indicators would mean connecting as by the dotted line and eliminating bells 2 and 3 as shown.

On depressing No. 1 group pushes, however, the main hall indicator and bell would function normally, but so also would the other two main indicators and floor bells, since the common connection provides two parallel return paths to the transformer. For number 2 and 3 groups a somewhat similar effect would be obtained if their pushes were depressed. So that, without extensive alterations, this problem appeared to be insoluble. Furthermore to have three separate floors working on one bell seemed equally out of the question, since the three floor groups were supplied from separate transformers, each on a different phase. However, after some thought a simple solution was evolved. To use one bell from any floor indicator without interference to others, a form of selector as in telephony, with a secondary ringing circuit, seemed to be the answer. Accordingly, the wiring was left as before, and the main hall bells were fitted with contact arms instead of strikers. Being altered to hold instead of vibrating, when energised, these were now used as relays.

These relays were grouped together in an enclosed panel and a separate bell was supplied from the main hall transformer, so that as in Fig. 2 every floor group functions as before, but only one bell is needed for the whole floor call system. Doubtless manufactured relays could have been obtained, but since the existing bells were already matched in resistance with their respective floor circuits, it was natural to make use of them.—*J. T. R.*

Temporary Line Support

DUE to a heavy storm a large tree came down on a 400 V feeder, putting two spans out of action and buckling a couple of poles. Fortunately the poles at each end of the break were stayed and the lines shackled. After removing all the wires that had been brought down, a frame of No. 1/0 copper wire fitted with red insulators was made, as per



Details of the temporary support rigged up when the fall of a tree broke a pole

sketch, and four conductors of weatherproof cable (7/0·036) passed through and secured to the insulators. The frame was then hoisted and secured underneath the branch of a tree which was behind the damaged pole. This arrangement gave every satisfaction and enabled repairs to be taken in hand to restore the line to its original state.—*W. Gatehouse.*

Contributions to this page, dealing with specific items of interest to electrical engineers are welcome and, if accepted, will be paid for at our standard rates. Notes should be written on one side of the paper only, and preferably accompanied by sketches, which will be redrawn for publication.

Accent on DEVELOPMENT . . .

THE healthy interest taken by the supply industry in the E.D.A. Sales Management Conference is emphasised by the attendance figures, which this year reached 550 delegates, as opposed to 150 pre-war. This was emphasised by Mr. V. W. Dale in his opening remarks from the chair at this year's conference which was officially opened on Tuesday of last week by Dr. P. Dunsheath.

Commencing by quoting from Horace, "Work well begun is half done," Dr. Dunsheath proposed as a theme for the conference the two-fold one of "Work—and optimism." On the subject of work, he felt that too many people were inclined to consider work an evil, yet one could not go far without work. Regarding optimism, the curve of progress was never a straight line—its slope varied. In the engineering world the slope of a curve—its dy/dx value—might be zero or even negative, but that did not necessarily mean that the workers were not on the right lines. If progress was not always steady and continuous, they must not let it discourage them. With the two-fold theme of work and optimism the sky was the limit.

Dr. Dunsheath opening the Conference

The Salesman

In a primitive society there was little or no interdependence, which grew with the progress of civilisation, and one of the most important functions of a salesman was in tying together the discrete collection of different trades and professions which made up modern society. Of the requirements of a salesman most important were intelligence and training. Inclination was another important factor and this was related to intelligence—a man was happy when he felt himself master of a worth-while job. There was no better way of learning than by teaching others. He would not attempt to talk to them on selling, but would confine himself to the requirements of a salesman. Common humanity, honesty of purpose, generosity and an ability to get on with people were required. It was humanity, often miscalled psychology, which counted.

The electrical industry was the life blood of the community, and their task was to use their skill in achieving success on a larger scale. Those who contributed to this great task would not go unrewarded.

Publicity

First paper presented to the conference was "Publicity for Load Building," by Mr. Guy R. Mountfort (deputy chairman, Advertising Advisory Council, Dollar Exports Board, and a director of Mather and Crowther, Ltd.). Introducing the speaker, Mr. H. F. Carpenter (secretary, B.E.A.) pointed out that costs of generating equipment, transmission and distribution had trebled, instancing his own old station (Ironbridge) which had been built for £14 per kW. These increased costs were now beginning to show in the accounts, and they would not be recouped automatically. They were faced with the choice of raising tariffs or building load, and load-building could not be indiscriminate, with a potential gap of 2,000 MW in a severe winter. They had three problems—to explain the shortage, to reassure the public that they were doing everything in their power, and to build up the off-peak load. This required publicity, and it must be expert.

Reviewing the question of publicity, Mr. Mountfort pointed out that manufacturing companies in other spheres—say, soap—had used the lull during the change over from a sellers' to a buyers' market in overhauling their publicity programmes. The British power industry was in a particularly embarrassing

. . . at the E.D.A. Sales Management Conference

position; the gas industry, for example, which had got away to a good start, was outselling them in the cooker field by 3-1. Nevertheless, he suggested that they should consider the planning of an all-out campaign for load building now. It took a long time to plan.

American Methods

Power companies in the U.S. "sold" not only the companies themselves, but the entire industry, because they realised only too well that their own prosperity was bound up with that of the manufacturers and the retailers. There was a remarkably high degree of co-operation between the various sections of the industry, due to the realisation of this common bond, and the utilities worked hard to build business for dealers as well as for themselves. When the Philadelphia Co. went all out for cooker load, they sold the idea not of their cookers but of electric cooking, and though they were doing 97% of the cooker sales at the beginning of the campaign, within two years the dealers had captured 80% of the market. But the company was happy—it had the load.

The intensive competition of the appliance market caused forceful advertising. Manufacturers boldly claimed advantages and if they did not exist, the designers soon had to provide them, resulting in constant minor refinements and progress towards a better and cheaper product.

In spite of the enormous amounts of money spent on advertising (if the B.E.A. spent on the same scale per consumer as the Philadelphia Co., their appropriation would be £3½ million a year) the American outlook is severely practical, and they would not dream of launching a campaign or a new product without extensive market research, followed by a carefully planned campaign. This attitude was in strong contrast to that frequently encountered in this country where the approach all too often was: "We have an advertising appropriation of £000,000; how shall we spend it?" Advertising could do a lot, but it could do a lot better if it were based on facts.

Rusty Salesmanship

After a long period of restrictions the more valuable skills of active business got rusty and management was left to find peace-time markets with the most serious shortage of all—the shortage of creative salesmanship.

"Salesmanship" was used in its widest sense, including everything contributing to the sale of an article or service—not merely design, pricing, advertising and sales promotion, but the outlook, philosophy and ideals of the people owning and directing the companies concerned. In his opinion, the failure of many dollar exports today stems from a "manufacturing attitude," which expects the dealer to do the selling. Selling was a continuous process right from where the product originated. Manufacturers who were content to sit and wait passively for times to get better might not live long enough to enjoy them.

Staff Training

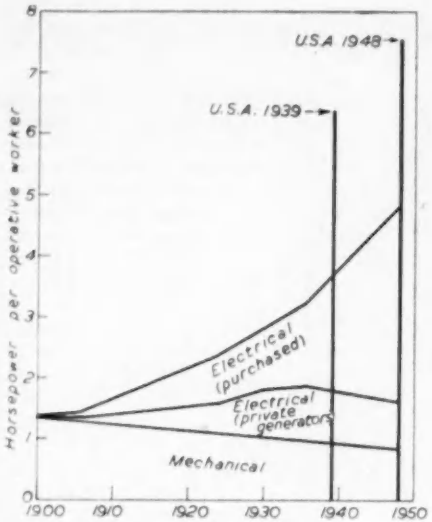
"Selection and Training of Sales Staff" was the subject of Mr. J. A. Stedman's paper, on Tuesday afternoon. Reviewing the requirements of a successful salesman, Mr. Stedman pointed out that he was the tangible representative of the intangible reputation of the Area Board, and must foster the prestige and goodwill of the Board. He must educate consumers in the use of appliances, and have an intelligent insight in supplying the consumer's requirements. He required a host of virtues such as enthusiasm, patience, perseverance, politeness, tact and loyalty.

People who possessed these qualifications could easily get jobs elsewhere, and would do so unless the prospects on the sales side of the industry provided adequate attraction.

Sources of recruitment were mentioned briefly and the general types likely to be recruited from each source. Standards to be aimed at were also discussed, as was a suggested procedure for interviewing and selecting applicants. Various forms of training were enumerated, and the relative advantages of these various methods were discussed in relation to one another. It was suggested that lack of personal experience with domestic apparatus could be a severe handicap to sales, and it was suggested that this should be overcome by a scheme whereby apparatus could be purchased on special terms or, in certain cases, loaned. The value of a period spent actually working in an electrically equipped canteen was also emphasised.

Selling to Industry

The paper by H. J. Gibson, B.Sc., A.C.G.I., M.I.E.E., and F. C. Duffield, A.M.I.E.E., of the



H.P. per industrial operative

Midlands Board contained much controversial matter. It was accompanied by an excellent film made by the Midlands Board which showed some of the applications of electricity in a number of industries covering a wide range of products.

Displacement of mechanical power in factories was, naturally, a strong feature of the paper, as was the question of competition between public supply and private generation. The diagram (reproduced) was intended to give an indication of the future business which may be obtained. It also gives a comparison of the installed h.p. per operator in this country and in the U.S., which is at present about 4·7 as against 7·5 in the U.S.A. These are quoted alongside consumption figures given by Mr. Melling of 2,100 and 7,000 kWh respectively.

Regarding the displacement of private generation, although the curve shows a definite reduction since 1938, it was stated that some 16% of industrial power was still privately generated. It was, however, stated that the high cost of fuel oil and low cost of electricity had practically eliminated the diesel engine as a serious competitor, although steam turbines, particularly those associated with the use of process steam, might present a more difficult problem.

Displacement of gas and other fuels in process work was another aspect dealt with. Some progress was made during the war, but many major problems had not, it was felt, been tackled seriously enough either by the supply industry or the manufacturers.

Sales Methods

It was emphasised that, in addition to routine sales, the industrial sales engineer must keep himself constantly informed of new developments, methods and practices. The active promotion of utilisation in industry is a long-term and complex enterprise. Organisation, advisory, contracting and maintenance services were all dealt with in some detail.

The question of load factor and diversity was touched on briefly (since it would really need a paper to itself), and some consideration was given to tariffs, a point being made of the increasing preference for two-part tariffs as load factors tended to rise. Monthly demand charges were suggested in place of the annual charge, and it was also suggested that the kW basis (with power factor penalty) would be more advantageous than a kVA basis, since it showed up the consequence of bad power factor more distinctly, and thus awoke the consumer's interest.

Under the heading of "Applications," a brief survey was made of some of the main applications—lighting, motive power, welding, process and space heating, and application of electronics methods of control.

As might have been expected with a paper which covered such a wide field, the discussion itself showed a very high diversity factor, and the topics selected ranged from tariffs to the education of Area Board electricians in the maintenance of electronic apparatus. Opinion was expressed that the ousting of private plant would not be such an easy matter, and it was suggested that the provision of standby facilities by an Area Board instead of being made the subject of a prohibitive tariff should be welcomed as a means of getting one's nose in, as it were.

Rural Electrification

"Catering for the Farmer's Needs," by E. C. Claydon (South-Eastern Board), pointed out that recent surveys of farm mechanisation show that the average consumption of electricity on the farm is disappointingly low since field work and transport account for some 75% of the total power requirements of a farm. In addition two-thirds of our farms are without public supply. Any attempt to justify extensive electrification on a purely economic basis is likely to fail once the cream has been skimmed from the area concerned. Nevertheless, concentra-

tion on the economic aspect alone would be a mistake. The great social need for a thriving agriculture—which means a contented rural population—must be recognised.

In many parts of the country the dealers and contractors got the cream of the business while the supply got the skimmed milk and the headaches. A greater effort should be made to secure installation business to offset the losses of an uneconomic supply. There was a need for co-ordination of problems of equipment, supply, and demand, and the requirements for a successful farmers' representative were outlined. Other important items to be considered were liaison with organisations such as the N.F.U., N.A.A.S., and participation in agricultural shows, with emphasis on a form of display designed to put over a particular message rather than a stand packed with apparatus looking like a walk-round store.

The remainder of the paper was devoted to recent developments in equipment design, with particular emphasis on crop drying, and a consideration of wiring systems and installations.

Sales Policy

Probably the most controversial paper of the entire convention was "The Sale, Credit Sale, and Hire of Domestic Appliances" by N. F. Marsh, M.A., M.I.E.E., of the East Midlands Board, which raised a number of points on which widely differing opinions are held.

Mr. Marsh gave it as his opinion that the main business of an Area Board is to sell electricity and to give its consumers adequate service, and he did not consider that 'all-out sales with the sole object of making a direct profit was a good policy. Thus the criterion of a good salesman was not necessarily the amount of domestic equipment he could sell in a month—a satisfied consumer was always worth more than a few pounds profit on apparatus sales.

Purchasing should, he considered, be decentralised to district or even Service Centre managerial level. Centralised purchasing tended to restrict the consumer's choice, and over-riding decisions from remote offices might result in a lowering of consumer service standards and an increase in dead stocks. " Type tests" were, he considered, unnecessary, nor did managers of service centres really require reports on performance to decide whether it met the needs of their own consumers. This did not, of course, refer to new apparatus of unconventional or improved designs.

Since there were many dealers who relied on this for their livelihood, radio and television, he thought, was a field which should not be entered except where particular service centres had been established in this market well before vesting day or where no adequate service was given by existing retailers. Lighting fittings was another field which, when no installation department existed, was best left to the contractor. Boards who had active contracting departments were in a good position to give a good example by setting a high standard in the type of fittings they sold.

Credit Sales and H.P.

Credit sales or H.P. were essential to assist consumers in purchasing the heavier type of apparatus. The purchase price should be based on the list price of equipment, to avoid criticism on the score of unfair competition. Terms should be available to all domestic consumers, including combined shop and house premises and farms, but there was no need to extend schemes to cover industrial or business consumers, and terms should be available for all domestic appliances down to, say, £2, with the exception of lighting fittings, which were often fragile and liable to damage. Periods of agreements suggested were three years for app'iances costing less than £25, five years for appliances costing more than £25, and seven years for cookers (except the breakfast type). Large deposits were not necessary, but he considered that the purchase tax should be paid in a lump sum, since future withdrawal or reduction in tax would lead to trouble with customers.

Maintenance should, in his opinion, be stated as a separate item in the agreement, and suggested charges ranged from 4s. 4d. a quarter for cookers to 1s. 7d. for wash boilers or immersion heaters, these being below the average charges in the areas since they commenced with new apparatus. Maintenance contracts should be optionally renewable at the end of the credit period, but the charges would, of course, have to be higher. Credit terms should include wiring and, where necessary, plumbing, of fixed apparatus.

Simple Hire

It was a mistake, Mr. Marsh considered, to drop simple hire entirely, in favour of credit sales. This was frequently justified on the grounds that hire charges based on a seven-year life approximated to H.P. terms. A reliable cooker lasted for fifteen years or more.

More important still was the fact that a number of undertakings had large hire schemes which were undertaken as a service to the con-

sumer and as a load-building policy, and he thought that it was still sound policy to hire "utility" cookers at 12s. to 14s. per quarter. Simple hire should, however, be restricted to major current-consuming appliances, i.e. cookers and wash boilers, and to those appliances not liable to purchase tax.

"Utility" cookers for hire service should be finished in mottled grey and mounted on legs, in order to line up with the many thousands of cookers out on simple hire of this type. Any attempt to introduce cabinet cookers in colours would result in many hirers wishing to exchange them. It would also cut across the field of credit sales. Two slides were shown of Jackson and Creda cookers of both types to illustrate this point that these utility models need not be unattractive.

On cooker sizes, he considered that two were sufficient, one having 2,000 cu.in. oven capacity, an 8-in. radiant plate, and a grill boiler for 3/5 persons. For 5/8 persons he favoured 2,700 cu.in. oven, an 8-in. radiant plate, a 6½ in. solid plate, and a grill boiler. Ovens should have thermostats, and radiant plates, simmerstats.

The number of makes of cookers available should not exceed two—more would complicate the spares situation, while concentration on a single make would remove competition. Rigid specifications were undesirable.

Wash boilers for hire service should be of simple construction with plain galvanized finish. He did not consider safety cut-outs essential since the number damaged by boiling dry was very small.

In his experience, credit facilities did not affect cash sales, and curves were given in support of this.

Facilities afforded by individual service centres should not be limited to their own districts, and a real effort must be made to break down the parochial outlook so that consumers could obtain the same service when visiting other centres. There was need for a similar liaison between Area Boards. Nothing was more annoying for a customer to find that he could not buy a particular piece of apparatus because he lived some miles away.

Mobile showrooms and prepayment meters were other topics dealt with in this paper.

Widely differing opinions were expressed in the discussion which followed. The sales policy outlined in the paper was criticised as "soft-pedalling" by some who were in favour of a really vigorous sales policy. Certain members considered that this should be extended to radio and television, while others agreed with the author. On the matter of credit terms, there was some criticism of the lump sum policy for purchase tax, opinions being expressed that this would kill a large amount of sales. The extension of credit terms to commercial equipment such as large refrigerators and rural gear was proposed—and opposed.

There was controversy over the "utility" cooker with legs for hire service, and a suggestion which seemed to meet with a considerable amount of approval, that cast iron was more suitable for cookers than the pressed construction favoured by most manufacturers. Some taking part were opposed to simple hire altogether. "Zoning" of different makes of cookers to different Area Boards was suggested.

On the question of testing of appliances, suggestions ranged from District to Area level, to be left to E.D.A., or be done by the B.E.A. An important contribution was the suggestion of a standardised H.P. scheme—nationalisation had, it was stated, missed a golden opportunity of promoting uniformity between Area policies.

Lighting Development

"Lighting Development and Possibilities" was the subject of a paper by Mr. J. A. PROWSE, F.I.E.S. Other applications of electricity now tended to overshadow lighting, and the energy used probably amounted to some 14% of the total sales, producing about 23% of the total revenue. The development potentialities were probably greater than for any other application, in the author's opinion, since few users employ the full amount they really need. Furthermore, if people became accustomed to the appropriate illumination level, the load factor rapidly improved since artificial lighting was switched on more often.

The problem of lighting development was dealt with from the standpoint of recommended illumination levels, the modern approach to selling requirements, and the improved lamps and lighting technique available. Principal groups of users were considered together with the various channels through which development could be stimulated, and a sharp line drawn between the prescription of satisfactory lighting and the sale of fittings. Suggested publicity and sales measures were reviewed, including the provision of "packaged" lighting units or kits. The necessity for obtaining *complete* fluorescent units was particularly stressed. An interesting suggestion was the use of filament lamp ballasts for fluorescent lamps, since the domestic consumer is not really concerned with lumens per watt.

The provision of a competent illuminating engineering service available to all customers would, it was emphasised, stimulate extensive and rapid development.

On Thursday evening, delegates saw a programme of the latest E.D.A. films. Friday morning was devoted to general discussion, and the conference luncheon (see page 796).

E.A.W. JUBILEE Conference

PERTH. MAY 1-6, 1950

Left: Lady Swaythling addressing the Delegates

IN the past twenty-five years a revolution has taken place in the use of electricity in the home. Appliances which were then regarded as luxuries are now considered necessities and the thought of a home without electricity has become something of a horror to the modern housewife. In this change of attitude the Electrical Association for Women has unquestionably played a large part, and in celebrating their Silver Jubilee at Perth last week, at which nearly 700 members attended, they are well justified in looking with pride upon their past record.

At the opening session on May 2, the President, The Dowager Lady Swaythling, read a gracious message from Her Majesty the Queen. Lady Swaythling referred to the benefit that electricity has conferred on the living conditions of people today, for it brings easier home-making within the reach of every woman and gives rural housewives the amenities of the town. She mentioned that the Dutch E.A.W. had sent, as a gift, a delightful Delft plate inscribed with greetings to the E.A.W. The members were welcomed by the Lord Provost of Perth, Mr. J. Ure Primrose. As a farmer he said that, as a result of experience, he had electrified more and more processes on their farm, and his wife had experienced electricity's benefits in the home. He looked to the E.A.W. to get the right kind of appliances in the home.

A welcome to members from the North of Scotland Hydro Board was given by Mr. Tom Johnson. He said that essentially hydro electric power was a means of labour saving, bringing a great economic boon. He referred to the

Some of the delegates who visited Clunie Power Station

Members of the platform party included Lord Provost J. Ure Primrose and Mrs. Primrose, Dowager Lady Swaythling, Dame Caroline Haslett, Lady McColl, and Rt. Hon. Tom Johnson

first of the schemes at Morar and Lochalsh, where 80% of the inhabitants had taken electricity and one third of them had electric cookers. Lady McColl also gave a welcome to all the Sassenachs.

Power in the Highlands

Following the addresses of welcome, Sir Edward McColl, Deputy Chairman of the North of Scotland H.E. Board, read a paper on hydro electric development in the Highlands. He pointed out that hydro power is something more than generating electricity, it is making a contribution towards reducing the turbulence of Scottish rivers which carry millions of tons of silt to waste.

A number of their dams were being filled with silt and in perhaps fifty years' time Pitlochry may have to be dredged. Schemes were also having their effect in developing the manufacture of hydro electric machinery on a large scale in Scotland. Sir Edward then spoke of the steps taken by the Board to preserve fish life in rivers.

The Scottish public take a pride in these schemes. But a great deal of uneconomic distribution will have to be financed by sales of surplus power to Scottish industry or to the B.E.A.

One of the great problems is the distribution of electricity, particularly in the many islands, both large and small. The question of finance is a serious one, and he suggested that they may yet have to appeal to the State for help towards this uneconomic burden. Another major development which was visualised was the burning of peat. Over two thousand square miles of Northern Scotland is under a blanket of peat, and it is proposed to build power stations beside the bogs, burning the peat and uncovering the clay which can be made into agricultural land.

Research is now being carried out on how to dry the peat preparatory to combustion.

In the afternoon the President presided at the annual general meeting. Dame Caroline Haslett presented the Report of the National Executive Committee which was contained in a special Silver Jubilee book including articles on the main avenues of electrical development. The five vacant places on the National Committee were filled by appointing Mrs. A. T. Dover, Miss F. E. Jones, The Dowager Lady Swaythling, Mrs. N. Boot and Mrs. Skinner. The following co-options to the Committee were made representing the areas, Mrs. J. Hayworth, Miss N. Balls, Mrs. W. B. Chilton, Mrs. T. Wild, Mrs. G. M. Bradley, Mrs. C. U. Cole, Mrs. J. S. Bowden and Mrs. Wheeler. The officers elected were President: The Dowager Lady Swaythling, Chairman: Mrs. A. B. Lewis, Vice-chair: Mrs. A. T. Dover, and Hon. Treasurer: Mrs. G. A. Tatchell, J.P.

Annual Luncheon

At the annual luncheon on Wednesday, the toast of the City of Perth was proposed by the Countess of Elgin and Count Kincardine, to which the Lord Provost replied. The principal toast, that of 'The E.A.W. Silver Jubilee,' was proposed by Lord Citrine. He spoke of the stirring times in 1925 when the E.A.W. was formed and the revolution that has taken place in generation and transmission. A further step forward is to be made now with the development of a super grid at 275 kV. There will, however, be certain lines which will radiate from stations on coalfields, at 380 kV.

In replying, Dame Caroline Haslett reviewed the influence of the E.A.W. over the past 25 years. They had focused attention on the need of the homes in relation to scientific development, and women now had a place on technical committees.

Finally, we offer congratulations to Mrs. H. S. Carpenter, wife of the B.E.A. Secretary, for winning for the second year the Lady Hughman Challenge Bowl for golf.

Energetic Development

REPORTS FROM TWO OVERSEAS SUPPLY UNDERTAKINGS

AN increase in sales of 204 million units during the course of a year is no mean achievement. Couple this with the fact that a further 50,000 consumers were connected during the last three years, and it will be realised that the undertaking concerned is a vast and virile one. It is, in fact, the State Electricity Commission of Victoria, Australia.

Electricity sold by the Commission to all consumers, including bulk supplies, during the year ended June 30, 1949, amounted to 1,725 million kWh, compared with 1,521 million kWh in 1948/49, bulk supplies accounting for 33% of the former total. In the domestic sphere, sales increased by no less than 24·7%, and while the number of such consumers was increased by 14,520, the average consumption per domestic consumer stepped up by 219 kWh to 1,370 kWh during the year. Apart from the additional use of other appliances, hot water services were largely responsible for the increase, and it has since become necessary to curtail by 50% the number of new water heaters connected to the Commission's system for the next few years. There are, in addition, some other restrictions still in operation.

Commercial consumption, too, increased by 11·2%, due to equipment being more freely available and substantial installations of modern lighting systems.

Rural Development

A further 1,238 farms were connected, bringing the total to 14,419. Evidence of the Commission's country electrical development is the fact that of the total of 372,135 consumers supplied, 153,741 are outside the Melbourne Metropolitan area. During the year under review 266 miles of h.t. and 253 miles of l.t. lines, together with 341 sub-stations, were erected outside the Metropolitan area. All this has been achieved in spite of difficulties and the acute shortage of materials and equipment, particularly steel. This problem has continued to cause the Commission grave concern, and items have been ordered from overseas at an additional cost of £1¼ million. For certain types of transformers for rural extensions, Australian manufacturers have quoted at least 5 years delivery.

Turning to the generation side of the undertaking, the report sets out in some detail the programme of major extensions, amounting in all to some 263 MW, which have been approved. Special measures have been taken to procure additional plant and it is expected that the output requirements should be overtaken by 1953. The total installed capacity of generating plant at June 30 last was 478,465 kW. Reference is also made in the report to the vast Snowy River scheme which is to be undertaken in two sections, the first with an estimated capacity of 1,020 MW and the second of 1,600 MW. Work has already been started on this project, and also on the Hume Reservoir scheme, which provides for the establishment of a station housing two 25,000 kW turbo-generators. Other schemes still in the planning stage include a 1,600 kW at Cairn Curran reservoir, and a proposal for a new regional power station at Mildura which would replace all existing plants in that area.

Brown Coal

A great part of the Commission's activities are bound up in the brown coal production at Yallourn and Morwell, increased use being made of this fuel in the Commission's power stations. At the Yallourn open cut 6,235,611 tons of brown coal were excavated during the year, briquette production amounting to 558,899 tons. The contractors commenced opening up the Morwell cut; at the close of the year 43,500 cu yds of overburden had been removed.

UGANDA BOARD

THAT eminently satisfactory progress is also being made in the construction of the Owen Falls hydro-electric scheme is evident from the second annual report of the Uganda Electricity Board, covering the year to December 31 last. Contracts have already been placed for the civil engineering works and the principal plant, commitments at the end of the year amounting in all to some £5,750,000, as we have already recorded.

At the Kampala "B" temporary station two Harland and Wolff 940 kW diesel generators and one Mirrlees 750 kW set were commissioned during the year, bringing the installed capacity to approximately 2,600 kW. Work is also well advanced in connection with the Jinja "B" temporary station, which is now to be extended to an ultimate capacity of 11,000 kW. The first two sets should now be in operation. A further 880 consumers were added during the year, bringing the total to 4,143. Power sales during the period amounted to over 8 million units. Believing that the development of the mineral resources of Uganda offers the largest field for demand for electricity, the Board has appointed Mr. O. G. Weller as chemical engineer, while retaining the services of Dr. A. J. V. Underwood, consulting chemical engineer.

The Board has found that recruitment of staff has been hampered by the limited housing accommodation available. It is also aware of the need for training Africans to hold positions of responsibility in the Board's employment, and it is proposed to establish a regular training course.

overseas news

N.S.W. Fair

New South Wales is to hold a Construction Industries Fair and Convention at Sydney in 1952. It has been decided to invite prominent overseas experts in water and soil conservation, hydro-electric schemes and highway construction.

Boilers for Yallourn

The State Electricity Commission of Victoria has placed an order, valued at £2,250,000, with John Thompson (Australia) Pty. Ltd., for six steam boiler units for the Yallourn "D" power station which is scheduled to be in commercial operation by 1956.

Sets for Victoria

The State Electricity Commission of Victoria has placed an order with Sulzer Bros. (London) Ltd. for six diesel generating sets for installation as main power units in Warrambool and Shepparton stations. Each set is to comprise an 8-cylinder Sulzer 2-stroke engine normally developing 2,800 b.h.p. at 250 revs/min, coupled to an alternator made by the Electric Construction Co. Ltd. The order also includes the accompanying switchgear and transformers by E.C.C. In accordance with the agreement signed with Richardsons, Westgarth and Co. Ltd. some months ago, the oil engines are to be built for Sulzer by George Clark (1938) Ltd.

Cable Laying at Adelaide

The Electricity Trust of South Australia has recently completed the laying of a submarine cable between the new Osborne power station and a substation at Kilburn, crossing the Port River, Adelaide. Originally the link was to consist of two 66 kV overhead line feeders, but to conform to the Harbour Board clearance requirements, the lower heights for an o.h. line would have been excessive. The new installation comprises two parallel 3-core submarine cables, each 500 yards long, paying out being made from a barge guided across the river. The cables are set in a trench 14 ft below the existing depth of the river, to allow for subsequent dredging work. Pirelli-General cable of 0·15 sq in. cross section was supplied by the General Electric Co., the submarine sections being specially armoured, with protection against toredo worm. The two cable circuits are now in operation at 33 kV, carrying about 175 A each.

Paying out the cable across the river at Adelaide

Victoria's Shortage

Although the end of Victoria's power shortage is in sight, Mr. R. A. Hunt, chairman of the State Electricity Commission, has emphasised that restrictions now in force would have to be observed rigidly this winter. Under this restriction, radiators are banned between 7.30 a.m. and 5 p.m. in domestic premises, and at all times in offices, commercial premises and factories; shop window display lighting, signs, and exterior lighting are permitted only between 6.30 p.m. and 11 p.m.; while lighting in shops, offices, warehouses, etc., is to be reduced 50%.

Electrification in Tasmania

There are now 74,005 electricity consumers in Tasmania, according to a statement by the Premier last month. Some 450 new consumers were connected to the Tasmanian power system, bringing the total number of new consumers since July last to 3,088. At present new consumers were being connected at the rate of 4,500 a year. The greatest number connected in any one year to date was 3,939.

Electrification in Manitoba

More than 17,000 farms in Manitoba will have an electricity supply upon completion of the Provincial Government's 1949 rural electrification programme, the Minister for Public Utilities, Hon. William Morton, told the Provincial Legislature recently. Introducing his Department's estimates of $131,943 for the 1950-51 fiscal year, he said plans had been made for extensions to a further 37 towns and villages during 1950. Applications had been secured and materials were either in stock or on order in connection with a further 5,000 farm programme

which will be undertaken in the year. The most important project for the main source of power supply is the construction of a terminal station at Parkdale to provide facilities for 115 kV transmission to Brandon and 33 kV transmission to the interlake area.

Help for Saskatchewan Farmers

Among the amendments proposed to the Power Corporation Act in a Bill before the Saskatchewan Legislature last month is one empowering the Corporation to stock and sell standard generating plants. It was pointed out that this step was necessary to help farmers and others to provide their own small plants until such time as the Corporation's transmission lines could reach them.

A New Association

Electrical contractors in British Columbia will probably form a new association in the near future, it is reported. At the recent meeting of the Vancouver Electrical Association it was proposed that a new parent body, to be known as the Electrical Contractors' Association of B.C., should be set up to give all contractors representation.

Europe's Wind Power

A meeting of experts convened by the Organisation for European Economic Co-operation, has decided upon a programme of joint research in connection with electricity generation by wind power. In this way it is hoped to speed up the work by applying wind power to the generation of electricity at a low cost in member countries interested in the scheme. It is pointed out that the high cost of such experiments has hindered progress and, although individual member countries will continue to build pilot plants and conduct research on their own lines, information obtained at all stages will be exchanged to avoid waste of effort.

A Cut in France

A reduction of 16% in charges to domestic consumers and 35% to industrial concerns was announced last week by Electricite de France—the French nationalised industry.

Economies in Bangalore

Bangalore is now affected by an electricity shortage, due to a scarcity of water in the Krishnaraja Sagar Reservoir. With few summer showers, and the monsoon not due till the end of this month, the Government of Mysore has urged all power consumers to co-operate in economies to tide over the period.

—And in Madras

In South India, too, a considerable drop in the water level of the Mettur Dam and other southern reservoirs has seriously hit electricity supplies in that area. The Government has directed that minor industries should work only during non-peak hours. Textile mills which were working three shifts a day are now only doing two shifts. The situation has been further aggravated by the breakdown of a boiler at the Basin Bridge power station of the Madras Electric Supply Corpn.

The N.Z. Market

Last week we gave details of manufacturing facilities for electric cookers and heaters in New Zealand. We now have a further report dealing with other domestic appliances. In this it is stated that the production of vacuum cleaners, refrigerators and washing machines in the Dominion is on the increase. While it is expected that production of vacuum cleaners will exceed the domestic demand next year, there is still a shortage of refrigerators and washing machines, but the imports of these goods are declining, although the market for components and raw materials remains steady. At the moment there are three N.Z. firms making cleaners, the prices ranging from £13 19s. 6d. to £25 7s. 6d. Washing machines are now made by nine concerns, the import requirements, including motors, wringer heads, gear boxes, and steel being obtained almost entirely from the U.K. Prices range from £51 9s. upwards to about £100, and new models are being produced this year styled after overseas products. The fifteen firms now making domestic refrigerators complain that insufficient import licences have been granted over the last two years to bring into the country sufficient sealed units to cope with the productive or assembly capacity of the local industry. Most of the components are obtained from the U.K., Australia and Denmark. Pre-war most of New Zealand's refrigerators were supplied by the U.S., but now the only components allowed in from dollar sources are for maintenance and replacement of existing plant.

Visitors at Bulawayo

Reference to a huge ferro-chrome plant which is to be erected during the next two and a half years at Gwelo, and which may consume as much electricity as Bulawayo or Salisbury did at the present time, was made by Mr. A. B. Cowen, chairman of the Electricity Supply Commission of Southern Rhodesia, at a dinner given in Bulawayo a few days ago to mark the visit of the presidents and secretaries of the Institutions of Civil, Mechanical and Electrical Engineers. The dinner was given by the Rhodesian Society of Engineers. Mr. Cowen instanced this as an example of the demand for electricity facing the colony. The Zambesi River, he said, is and will be the lifeblood of the country; investigations had been under way at Kariba for the past nine years, and it was now certain that the country could develop 1,000 MW at one point only, at a moderate cost. Later, after Mr. A. R. Gibson, city electrical engineer of Bulawayo and vice-president of the Rhodesian Society of Engineers, had welcomed the guests, the presidents of the Institutions, Mr. V. A. M. Robertson, Dr. S. F. Dorey and Prof. E. B. Moullin, in turn expressed thanks at being invited to visit the Colony.

PERSONALITIES

IN THE INDUSTRY

After 48 years' service with the Metropolitan-Vickers Electrical Co. Ltd., exclusively devoted to the development of electric traction, **Mr. T. Ferguson,** consulting engineer on traction matters to the company, has now retired. Prior to joining the company, then British Westinghouse, in 1902 as a traction engineer, he had spent six years with the Gt. North of Scotland Railway. He was associated with the Mersey Railway electrification, the first traction contract undertaken by the B.W. Co. Since then he has been intimately connected with all the firm's large traction contracts. In December, 1944, on relinquishing executive work, he was appointed consulting engineer, Traction Department.

Mr. T. Ferguson

Mr. J. Warnock, A.M.Inst.C.E., M.Inst.Struct.E., hydro-electric engineer to the Merseyside and North Wales Division of the B.E.A., is to represent the British Electricity Authority at the sectional meeting of the World Power Conference to be held at New Delhi, India, in January next. The conference will include a meeting of the Fourth International Congress on large dams, arrangements being made for visits to some of the main dams.

Winners of the Association of Supervising Electrical Engineers' Branch Merit Cup for the session 1949-50 was the North-West London Branch. Our photograph below shows the members of the committee (*left to right*): Messrs. **W. R. Blois, A. Woodward, E. Butler** (chairman), **R. Mathieson** (secretary), **W. F. Parker** and **P. A. Thorogood.**

Winners of the A.S.E.E. Branch Merit Cup

At the annual general meeting of the Association of Electrical Machinery Traders, **Mr. R. H. Gill,** managing director of the Midland Dynamo Co. Ltd., was elected chairman for the ensuing year, with **Mr. H. A. C. Hassall,** of Electrical Power Maintenance Service Ltd., as vice-chairman, and **Mr. G. H. Holding,** of Stewart Thomson Bros. (Liverpool) Ltd., as treasurer.

Mr. E. Bowyer, Rubber Division manager of British Insulated Callender's Cables Ltd., has been appointed a Justice of the Peace for the borough of Leigh, Lancs.

Just back from an extensive business tour of South Africa during which he made a close study of the country's electrical and engineering requirements, is **Sir Harry Railing,** chairman and joint managing director of the General Electric Co. Ltd. He visited many of the Union's important power stations, mines, steelworks and secondary industries, taking time off to deliver speeches to a number of societies, including the South African Institution of Electrical Engineers. Accompanied on the visit by Lady Railing, he arrived back in this country on Friday last.

For the position of district engineer in the Greenock district of the Clyde sub-area of the South West of Scotland Electricity Board, **Mr. H. S. N. Sharp** has been selected. He was previously mains superintendent at Greenock.

Three long-serving members of the staff of Dicks, Ltd., electrical contractors of Winchester, were the recipients of presentations at a dinner held in their honour recently. These are **Mr. H. T. Poole,** who joined the firm in 1897; **Mr. A. W. Faithful** and **Mr. J. Noice,** both of whom had served since 1899.

In the technical department of the London Division, B.E.A., **Mr. M. E. Harper,** A.M.I.E.E., has now been appointed senior assistant engineer, to be in charge of the metering section. Since October, 1948, he has been third assistant engineer in the metering section of the South Eastern Division. He gained early experience with the Halifax Electricity Department, and after war service he spent some time with the Woolwich undertaking before joining the C.E.B. in 1947 as general assistant engineer.

Chosen as mayor of Malmesbury for the second year in succession is **Mr. R. G. Young**, partner in the electrical and radio firm of Sabery, Young and Harris.

Mr. C. F. Coupland, who was formerly with Clang, Ltd., has now been appointed sales representative by T.M.C.-Harwell (Sales), Ltd., in the areas covered by the South Western and South Wales Electricity Boards.

Air Vice-Marshal R. S. Aitken and **Mr. H. Winston Bailey** have retired from the board of Radio and Television Trust. In addition, **Brig.-Gen. R. F. Legge** has resigned the chairmanship but remains a director, and **Mr. A. P. G. Walters** has been appointed chairman in his stead.

Overseas business demands continual interest from executives in this country, and **Sir George Bailey**, chairman of the Hotpoint Electric Appliance Co. Ltd., and deputy chairman of A.E.I., has recently made a tour of the company's interests in South Africa. Our photograph shows

Sir George and Lady Bailey homeward bound

Sir George and Lady Bailey on the deck of the S.S. *Edinburgh Castle* when she docked at Southampton last month.

The Ministry of Supply has announced that **Prof. M. H. L. Pryce**, Wykeham Professor of Physics, Oxford University, who is consultant to the Atomic Energy Research Establishment at Harwell, has agreed to be responsible for the technical supervision of the theoretical physics division at Harwell for the time being. This position was formerly held by Emil Fuchs. Prof. Pryce has been Wykeham Professor since 1946. He is an expert on the industrial application of atomic energy and in 1946 he was one of the signatories of the Atomic Scientists Association memorandum on the international control of atomic energy prepared for submission to the United Nations Atomic Energy Commission.

Dartmouth representatives receive the cup

Following the announcement that the Dartmouth Service Centre had won the South Western Electricity Board's area challenge cup in its first window display competition, officials of the branch were recently presented with the trophy. Our picture, above, taken at the ceremony shows, left to right, **Mr. L. F. Wood**, commercial assistant, Dartmouth, **Mr. S. F. Steward**, chairman of the Board, **Mr. R. W. Steel**, chief commercial officer, and **Mr. W. H. Piper**, assistant branch manager, Dartmouth. Messrs. Piper and Wood were jointly responsible for the winning display.

At present a senior assistant at Northampton Polytechnic, **Mr. W. A. Turner**, B.SC., has been chosen as the new head of the Electrical Engineering Department of Brighton Technical College. He takes up duties on September 1.

We understand that **Mr. M. Jennings**, M.I.Mech.E., has formed a partnership under the style of Mark Jennings, Son and Partners (of which he is senior partner), to practise as consulting engineers and architects, with offices at 116 Victoria Street, S.W.1, and 41 Northgate Street, Bury St. Edmunds. The other partners in the concern are **Mr. C. D. Brown**, A.M.I.E.E., **S. Goridge**, A.M.I.Mech.E., A.M.Inst.F., **O. C. M. Jennings**, M.B.E., B.SC.(Eng.), and **J. M. Slater**, A.R.I.B.A., with **Mr. L. Turner**, B.SC., M.Inst.C.E., M.I.Struct.E., M.Cons.E., as associated adviser.

Mr. J. C. Milne, A.M.I.E.E., M.Amer.I.E.E., manager of the Switchgear and Rectifier Departments of the Electric Construction Co., Ltd., is now on a visit to America and Canada. In the U.S. he will visit the Textile Exhibition at Atlantic City, and prior to returning next month will go to the Toronto Fair.

Formerly with the Clifton Aircraft Co. and South Wales Switchgear, Ltd., **Mr. P. R. Davies** has joined Gillott Electro-Steam Cookers, Ltd., as technical and sales representative for South West England. Gillott's have also appointed **Mr. J. D. Robertson** as technical and sales representative for South East England. He was previously with Simplex Electric Co., Ltd.

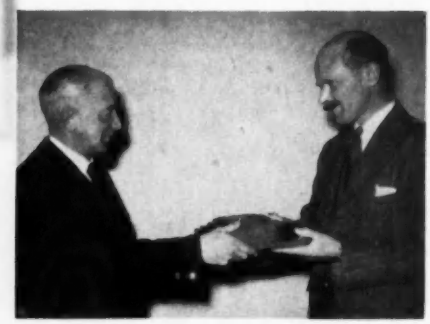
Mr. J. W. Davis

Until recently with the British Thomson-Houston Co., Ltd., of Newcastle-on-Tyne, **Mr. J. W. Davis** has now been appointed lighting engineer for Crompton Parkinson, Ltd., in the Northern Counties, and has taken up duties at the Newcastle branch. For a time he was also with Benjamin Electric, Ltd.

Station superintendent at Woolwich generating station of the London Division, B.E.A., **Mr. C. Cooper,** A.M.I.E.E., is shortly to retire. The division has now nominated **Mr. J. Harvey,** A.M.I.Mech.E., to succeed him. Mr. Harvey has been turbine house superintendent at Fulham generating station since vesting day, having earlier served with Gloucester and Kingston-upon-Hull Corporations. Previously he spent a period with the Peninsular and Oriental Steam Navigation Co.

District engineer at Battersea, South Western Sub-Area, London Electricity Board, **Mr. W. T. Magrath** has retired after completing 40 years' service in the industry. Graduating from Birmingham University, he entered the service of Battersea Borough Council in 1910, and was for some years distribution superintendent. On nationalisation, he became district engineer. At a dinner given in his honour, a presentation was made to him on behalf of his colleagues by **Mr. C. W. Blake,** sub-area manager.

Our photograph below was taken at the presentation to **Mr. F. W. W. Pattison,** on his recent retirement, when **Mr. G. T. Garwood,** Devon sub-area manager of the South Western Electricity Board, presented him with a typewriter and a fountain pen, on behalf of his colleagues. Mr. Pattison was for twenty years a director and commercial adviser of the Exe Valley Electricity Co., and remained in the service of the Board after vesting day.



Presentation to Mr. F. W. W. Pattison, left

Mr. W. McClelland

Mr. A. W. C. McArthur

W. T. Henley's Telegraph Works Co., Ltd., announce that **Mr. W. McClelland,** C.B., O.B.E., M.I.E.E., a director since 1934, has retired from the board. **Mr. A. W. C. McArthur,** M.I.E.E., M.I.W.M., has been appointed a director as from May 5. Mr. McArthur recently completed 50 years' service with the company and has been works manager of Henley's North Woolwich cable factory since 1939. He is also works manager of Henley's factories at Birtley, Co. Durham.

Until recently general manager with Ensign Lamps, Ltd., of Preston, **Mr. W. R. T. Willis** has been appointed general sales manager with Luxram Electric Ltd., in charge of sales throughout the United Kingdom.

A keen football fan, **Mr. C. R. King,** M.Inst.F., chairman of the East Midlands Electricity Board, has been appointed a director of the Derby County Football Club.

OBITUARY

The death occurred recently of **Mr. D. Dundas,** aged 74, senior partner of Archibald Watson and Dundas, electrical and mechanical engineers of Glasgow. He received early experience in mechanical engineering with the North British Locomotive Co. and Mavor and Coulson, Ltd. Later he devoted his attention to the electrical industry, becoming associated with the British Thomson-Houston Co., and supervising the work of constructing a second underground railway in London. He returned to Glasgow in 1905, joining Archibald Watson, Ltd., and establishing their electrical department.

We note the death, in Brussels on May 3, of **M. Maurice Travailleur,** aged 79, who was early associated with Marconi's Wireless Telegraph Co. Ltd., and latterly a director of the Société Belge Radio-Electrique. In 1897 he was appointed electrical engineer to the King of the Belgians, and became a director of Marconi International Marine Communication Co., in 1900, remaining on the board for some years.

The death occurred on May 4 of **Dr. H. Shaw,** D.Sc., director of the Science Museum, South Kensington.

Gas Turbine Loco.

Details of Western Region's Experimental Engine

HIGH availability combined with low maintenance cost are the potential advantages of a gas turbine locomotive which caused the Great Western Railway to order a unit of this type in 1946. Brown Boveri, the Swiss firm, were selected to design and build the loco. because of their six-year experience with this type, and the engine is now undergoing trials on the Western Region of British Railways.

Numbered 18000, the locomotive is 63' t long overall and weighs some 115 tons. The turbine is coupled to a d.c. generator through reduction gearing, and the generator in turn feeds four traction motors, two on each bogie. The maximum tractive effort is 31,500 lb, from rest to 21 m.p.h., and the maximum speed 90 m.p.h.

The gas turbine, compressor, heat exchanger combustion chamber and geared generator are assembled on an auxiliary frame of the double ended locomotive. In addition, at the combustion chamber end there is an auxiliary diesel generator set, the train heating boiler and one of the traction motor fans. The other fan is placed at the main generator end, together with the two exhauster-compressor sets for the train brakes. Oil and water are carried both in the roof and in the middle portion of the main frame, fuel oil storage being sufficient for 250 miles.

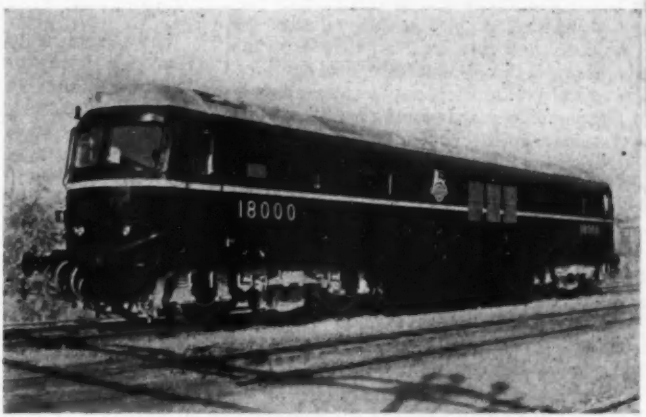
Running as a single-stage open-cycle unit at 5,800 r.p.m., the turbine unit includes a large heat interchanger placed to intercept the hot gases as they pass to the exhaust louvres in the roof of the locomotive. The air intakes are in the side of the body work, and can be seen in the illustration. A cast steel casing is provided for the axial flow compressor, while the combustion chamber has a replaceable liner of special steel. The inlet temperature is 1,100° F. The generator is driven from the compressor shaft through a single helical 6·6 : 1 reduction gear, with a special collar to take up the axial thrust.

Electrical Equipment

Three field windings are provided on the main generator to secure a strongly drooping characteristic—a counter compound winding, a shunt winding and a separately excited winding, this being fed from the diesel driven generator. The generator has a continuous rating of 2,390 amp at about 675 V and a 1 hour rating of 2,640 amp at 760 V. The maximum speed is 875 r.p.m. The continuous rating of each motor is 397 kW, 720 V, 585 amp, 1,550 r.p.m.

The main controller of the gas turbine has eleven notches, the first nine of which each correspond to a certain turbine power. An electro-hydraulic governing system adjusts the turbine fuel supply and the main generator field current to maintain equilibrium at this power. The last two notches permit field weakening with no increase in power.

A six-cylinder diesel engine drives the auxiliary generator, which is rated at 100 V, 40 kW. When required it can drive the locomotive as a light engine, at speeds up to 15 m.p.h. A 54-cell cadmium-nickel battery with 200 Ah capacity acts to start the diesel set. One of the electrically-driven auxiliaries, an automatic barring gear periodically turns the gas turbine shaft through 180°.



The 2,500 h.p. gas turbine locomotive No. 18,000

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ATOMIC ENERGY AT THE B.I.F.

PROGRESS in British Atomic Energy Research, under the aegis of the Ministry of Supply, is shown at a stand at Olympia. Of general interest is a large model of B.E.P.O., the larger of the two atomic piles at Harwell, which illustrates the action and operating cycle used. The sequence of events shows the moderating rods being withdrawn to start up the pile; the maintenance of the pile at a constant level output by servo mechanisms; the effect of a fault in the control equipment, resulting in an emergency shut-down and the re-charging of the pile with uranium metal. The model, of excellent workmanship, was constructed by the apprentices and staff at Harwell.

Also shown on the stand is an equipment used for the production of the important radio-active isotope of carbon—C-14—showing the complex chemical processes involved. On the industrial side, several applications of radio-active materials for control of processes are shown. These include the continuous measurement of thickness of material, the identification of empty containers on a moving conveyor system, and a demonstration of the elimination of static electricity formed in continuous strip processing. This latter application has many uses in industries such as textile and nylon spinning, cellophane production, printing, etc. Thel principle adopted is to provide a radio-active source above the material which provides a continuous ionisation of the air thus allowing the charge to leak away harmlessly to earth.

Tracer technique using a radio-active isotope is illustrated by a simple demonstration in which a solution containing a radio-active isotope is heated, evaporated and condensed. Rays from the isotope are picked up by a Geiger counter and demonstrate the transference of the isotope from the solution into the condenser. Gamma-ray photography for the examination of welds and castings is also illustrated by means of actual photographs taken by this means.

Advance in Illumination

BEGINNING with quotations from fourth-century writings, Dr. J. W. T. Walsh, M.A., D.SC., M.I.E.E., surveyed the evolution of the lighting art right up to the present day in a lecture delivered to the I.E.E. Utilisation Section last Thursday. Street lighting as a local government responsibility dates from about 1700 A.D. in our cities, he said, but both it and interior lighting were very poor until the invention of the Argand burner, with a cylindrical wick, changed the oil lamp in 1784, and Murdoch developed gas a little later.

At about the same time another important advance was made. Count Rumford developed a practical photometer, and so measurements of lighting efficiency became possible. Moreover, this versatile scientist went on to produce a treatise on illumination and stated clearly several principles now axiomatic amongst lighting engineers. Gas lighting developed rapidly throughout the nineteenth century, in spite of many vicissitudes, which were described by Dr. Walsh. But the really notable advance came with the invention of the Welsbach mantle, which gave an immediate fourfold increase in efficiency. The only rival for interior lighting was the filament lamp invented by Swan some four years earlier.

Thus lighting in its present sense began at the turn of the century, and it is interesting to note that the American I.E.S. was formed in 1906, and its British equivalent three years later. In 1913 tables of recommended illumination levels, in terms of candle power, began to appear. Since that time, ever higher values have been demanded, a phenomena which may have a psychological basis, but is also connected with the fact that light today has 1/30th of its cost of 30 years ago.

Brightness Contrast

It was soon recognised that too much surrounding brightness was uncomfortable, and "soft" lighting became fashionable, so introducing new difficulties of measurement technique. These were not overcome until the 1920's, when the idea of coefficient of utilisation was introduced. Nowadays the interest is shifting to brightness contrast engineering; louvreall ceilings are probably the biggest recent development. The important difference between design for illumination and for brightness is that the former variable is controlled by the designer, the latter alterable at the whim of the user.

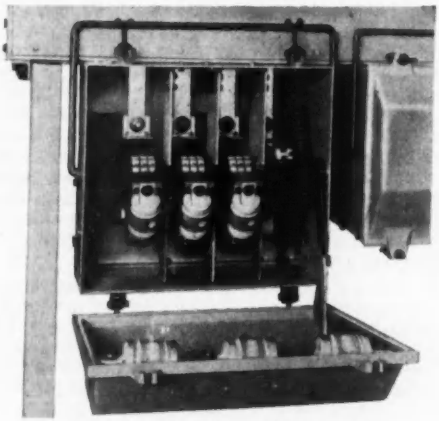
Turning to the future, Dr. Walsh looked for no spectacular advance, but thought that far wider possibilities of colour control would be developed than existed at present.

The BUYER'S *Column*

Switching with Ease

TWO points impressed us favourably when an opportunity arose to examine a fused switch manufactured by G.M. ENGINEERING (ACTON) LTD., of Standard Road, N.W.10. First was the smooth action of the mechanism, which required a minimum of effort to close or open, a not inconsiderable point where large switches are concerned. Second was the design of the contacts, which were of the pressure line type, with readily removable controller fingers.

The unit, fitted with h.r.c. fuses, is made in ratings from 60 to 300 amp at 660 V a.c. in s.p. and neutral, d.p., t.p. and t.p. and neutral models, a 300-amp unit being illustrated. It is described in leaflet F.S.103. Other leaflets available include B.B.T. 102 and 103 describing the B.B.T. busbar trunking system, with plug-in outlets; O.C.B. 102A, covering wall and pedestal mounted industrial oil circuit breakers from 100-600 amps; S.L.101 "Snaplock" moulded fuse units.



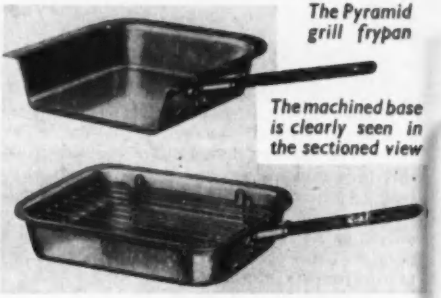
The "G.M." 300-amp fused switch

"Pyramid" Developments

"THE Joy of Perfect Utensils" is the title of a new catalogue issued by HAGUE AND MCKENZIE LTD., of Sloane Street, Birmingham 1, covering all types of "Pyramid" aluminium ware for heavy duty in large-scale cooking as in hotels, hospitals and canteens.

A recent development in the domestic range is the grill-frypan, which is suitable for either grilling or frying on an enclosed grill-boiler, having the standard heavy machined base characteristic of "Pyramid" utensils. It is being marketed in two models, with the handle on the long or the short side, to suit the cooker layout.

Another development of interest is the "Elizabeth Craig" measuring cup, in polished aluminium which has three sets of internal graduations, giving fractional "cup" measures, fractions of a pint and fluid ounces.

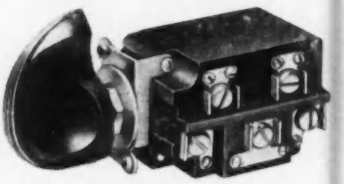


The Pyramid grill frypan

The machined base is clearly seen in the sectioned view

A new cooker switch by Arrow

ARROW ELECTRIC SWITCHES, LIMITED, of Hanger Lane, London, W.5, have recently included an a.c. cooker switch of improved new design in their range of products. It is smaller than the existing quick make and break types, but is interchangeable as regards fixing. These new switches are available in single and double pole 3-heat types as well as in various circuit control for multi-heat arrangements, with attractive stream-line bakelite pointer handles (as illustrated) or with a new self-indicating handle.



Arrow's new cooker switch

Plastic For Prototypes

SPECIALLY suitable for the production of prototype models, "Sondahl" is a new non-tracking insulation material marketed by SONDAHL CONCESSIONS, LTD., 80 Victoria Street, Bristol 1. The same properties that are of advantage in model making also recommend it for use where machining operations have to be performed on a moulding. Taking a place in the range of available insulating materials somewhere between mouldings and resin bonded fabric, it has attractive properties including an insulation resistance of over 10^6 megohms for electrodes 1¼ in. apart on a ¼ in. thick disc after water immersion, an electric strength at 90^0 C of 190 V/mil and a

tensile strength of 1 ton/sq in. "Sondahl" is manufactured in buff, black, brown, green or red colours by WALLINGTON WESTON & CO., LTD., Frome, Somerset.

Portable Industrial Fluorescent Lighting

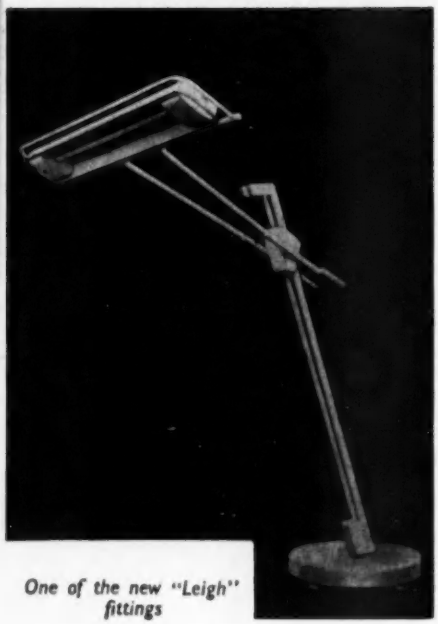
AN interesting development in the fluorescent lighting sphere is the introduction of portable fluorescent lighting fittings made recently by the LEIGH ELECTRIC CO., LTD., Lower Quay, Fareham, Hants.

These new fittings will appeal particularly to those industries where a high intensity of illumination is required on the working surface which does not always remain at the same level or even on the same plane, i.e. in the aircraft industry and in bus and coach works.

Either twin 2 ft, or single or twin 5 ft fluorescent fittings are mounted on a twin tubular boom. The inner end of the boom swivels on a trolley travelling on rails between the twin tubes of the inclined pillar. This boom assembly is balanced by weights inside the pillar tubes, the whole unit swivelling on ball bearings at the base, which is provided with four heavy ball or roller bearing castors for easy movement.

The starter gear is housed within the trolley, and is easily accessible. Heavy steel bases are provided to prevent tipping, so that the light can be easily manipulated from the hand rail around the lamp trough.

The larger models have a maximum lamp height of twelve feet at a reach from the base edge of about four feet. Smaller models have a maximum height of six feet with a reach of about 3 feet.



One of the new "Leigh" fittings

An Industrial Ceiling Rose

FROM the RAY ENGINEERING CO., LTD., Southmead, Bristol, we have received details of a new ceiling rose designed from the outset for fitting the standard circular conduit box.

Constructed from high quality thermo setting phenolic plastic, the "Rencol" ceiling rose has many other special features. It is a three-plate design thus giving maximum availability for looping in or for connection of earth wires when the installation concerns the use of suspended fluorescent lighting. Connecting blocks are of high-grade extruded brass and are located on all sides by complete box construction in the moulding. Ample size screws and washers secure the flexibles and adjacent screws are protected by a moulded barrier. The centre boss has a hole large enough to accept standard cab-tyre flex in this boss. Tapered slots wedge the individual cores. Normally supplied in black at 25s. 6d. per dozen, this accessory is supplied in other colours on application.

TRADE PUBLICATIONS

CONDUIT FITTINGS. "Blaco" conduit fittings are first grade products of F. C. Blackwell and Co., Ltd., Great Crosby, Liverpool 23. They are illustrated in the attractive catalogue recently published by the firm.

DIMMERS, STRIP AND MAT HEATERS. From Metway Electrical Industries, Ltd., King Street, Brighton, comes list JYH/30/R giving details of the sliding dimmers and industrial heating elements which are produced by the company.

ELECTRIC FANS. Sloan Electrical Co., Ltd., 41 Kingsway, London, W.C.2, and branches, send us a copy of their latest folder dealing with the many proprietary makes of domestic and window fans which they can supply in their "off the shelf" service.

SPARE PLANT SERVICING. A leaflet containing matter reprinted from a recent issue of *Machinery Lloyd*, has been received from the Electro Plant Company of the Palace of Engineering, Wembley, Middlesex. It provides an interesting survey of the unusual designs and test methods adopted by the company who specialise in the reconditioning and conversion of second-hand electrical plant to suit individual requirements.

TRANSFORMERS AND SWITCHGEAR. The new catalogue issued by Foster Transformers and Switchgear, Ltd., South Wimbledon, London, S.W.19, makes very interesting reading. To date this loose leaf book has sections dealing with power distribution, and mining, transformers, test equipment, heavy industrial switchgear and off-circuit lapping switches for transformers.

WIGGIN NICKEL ALLOYS. In the current issue of these notes, there is an interesting article on the use of Inconel for diesel engine exhaust systems in lifeboats. Copies of this publication are available free, from Henry Wiggin and Co., Ltd., Wiggin Street, Birmingham 16.

A view of the new station. Each chimney is 300 ft high. Left : the turbine hall in course of construction. The turbo-alternator nearest the camera is almost completed

PROGRESS AT CROYDON

FIRST section of the new super power station at Waddon, Croydon, is expected to be put into operation by August. The whole station will not be completed until 1952.

Four turbo-alternators, each of 52,500 kW, will then generate at 11,000 V, stepping up by unit transformers to 33,000 V and 132,000 V. The eight boilers—each with 320,000 lb per hour capacity, a pressure of 650 lb per sq in., and a final steam temperature of 875° F.—will consume 1,000 tons of coal a day. Special precautions are being taken to ensure that no grit is allowed to spread over the surrounding neighbourhood. When work on the new generating station started in September, 1945, the estimated cost was £3¼ million, and it was expected to be ready in about three years. That estimate was for two 50,000 kW. sets. It was later decided to extend the size of the station to four 52,500 kW sets with an ultimate capacity of 315 MW.

Consulting engineer for the station is Mr. F. N. Rendell Baker, former general manager of Croydon Corporation electricity department.

Electricity in Factories

AT a recent meeting of the Leeds and District Industrial Accident Prevention Society, Mr. F. MURGATROYD, M.SC.TECH., M.I.E.E., one of H.M. Electrical Inspectors of Factories, gave an address on the safe use of electricity in factories. He first reviewed the historical development of factory legislation, pointing out that the electricity regulations were not intended to give a detailed explanation of specific requirements. For this purpose the I.E.E. wiring regulations, British Standards and Codes of Practice, all of which had the support of the Factory Department, were more appropriate.

Turning to the causes of danger, Mr. Murgatroyd summarised the factors governing the type of electric shock that might be received, and pointed out the advantages of using high frequency current in this respect. Touching upon fire risk, he advised any factory official concerned with the safe use of inflammable or low flash point materials to consult the paper by two members of the Factory Department, which was published in a 1944 edition of the I.E.E. Journal under the title of "Industrial Fire Risks."

With respect to factory installations, the importance of efficient earthing was emphasised, and an instrument for measuring the resistance of the earth-leakage path characterised as a necessary accessory for every important factory. Another point that needed careful checking was that single-pole switches were not connected in the neutral conductor of an installation.

The use of low-voltage apparatus was rapidly becoming general for wet situations, for work inside earthed vessels, at outdoor building and other constructional operations, etc. Leading manufacturers of portable tools had agreed to manufacture for 110 V supply, and double-wound step-down transformers with the 110 V winding earthed at a centre tapping were commercially available. Finally, whilst explosive situations require the use of a certified flameproof installation of the group appropriate to the explosive risk, dusty situations require the use of dust-tight apparatus for which at the moment there was no specification and certification.

We Must Go Forward!

E. R. Wilkinson Urges Sales Managers at E.D.A. Lunch

ECHOES of Lord Citrine's speech at the E.D.A. annual luncheon were awakened by Mr. E. R. Wilkinson, B.E.A. commercial manager, addressing the luncheon of the E.D.A. Sales Managers' Conference on Friday. "We cannot be planned out of existence," he said. "We have gone forward in the past, and we shall go forward in the future." Referring to rumours of further capital cuts, he said that it seemed as if the more the industry had adopted a policy of restriction the more cuts it had suffered. We must go forward.

Unable to be present throughout the conference, due to participation in the E.A.W. Jubilee at Perth, he had, nevertheless, read closely the papers presented and he congratulated the conference on the high quality—and aims—of the papers,which he briefly reviewed.

Mr. E. R. Wilkinson at the E.D.A. lunch, with Mr. Guy R. Mountfort (Dollar Exports Board)

Referring to his recent visit to the U.S., he contrasted the unbounded enthusiasm over there with the attitude which circumstances had forced upon us in this country. It had been humiliating to be asked for particulars of our promotional publicity plans.

In conclusion, he made a special plea for the development of the cooker load. Gas competition was winning in a ratio of 3-1. This exactly reversed the trends indicated by a post-war census of opinion which showed 3-1 in favour of electric cooking. The cooker load was, he said, very largely an off-peak one and he implored them to spare no effort to develop it.

Mr. V. W. Dale, replying to a vote of thanks, pointed out that the roots of the conference went back to 1919 and during its 31 years, it had pioneered many important developments, including showrooms assisted wiring, and hire purchase.

Previously, Mynheer van der Toolen, from the Northern Holland Electricity Undertaking had given his impressions of the conference and drawn interesting comparisons with practice in Holland.

A. E. M. T. CONVENTION

TWO papers were included in the proceedings at the Association of Electrical Machinery Traders' convention held at Buxton recently. Mr. J. S. Hann (Griffiths Bros. and Co. (London), Ltd.) spoke on "Modern Methods of Impregnation with Varnish of Electrical Machinery." He mentioned experiments brought to a successful conclusion with cold-dipping of wound machinery, using oil-base varnishes which were more suitable for this method of impregnation than the newer therm-setting types. Comparative tests with identical coils dipped hot and cold showed a quicker rise in insulation resistance and a higher final insulation reading with cold dipping.

The other paper, by Mr. T. A. Atkinson (Dynamo and Motor Repairs, Ltd.), was entitled: "The Unusual in Repair-shop Practice." Amongst many highly interesting features concerned with the original design and manufacture of rotating electrical machinery which became apparent after breakdown, Mr. Atkinson particularly emphasised his opinion that the modern tendency to the integral casting of squirrel-cage rotors in the interest of economy was giving rise to many rotor troubles which could not be cured. The result was that small rotors frequently had to be scrapped.

THE WEEK
INDUSTRY *in news* COMMERCE

English Electric's Canadian Link

ENGLISH Electric Co.—which already owns factories in South Africa and Australia besides five in Great Britain—has bought a controlling interest in the John Inglis Co. of Toronto, Canada. The deal is believed to have cost £750,000. The John Inglis concern controls as a subsidiary company, English Electric of Canada, who are manufacturers of electrical machinery at St. Catherine's, Ontario. The Canadian firm has for years maintained cordial relations with the British company.

Major J. E. Hahn has agreed to remain in control of the John Inglis group, the parent firm of which manufactures heavy engineering plant as well as several consumer appliances.

"Linking of the resources in research and engineering in the United Kingdom to manufacturing facilities in the Dominion under Canadian management will play an important part in Canadian development," says a statement issued in London. "Both companies believe that it will contribute to the revival and expansion of reciprocal Anglo-Canadian trade."

Experts visit Marconi's

THE TELEVISING of various subjects in daylight, dusk, darkness and artificial light was one of the outstanding demonstrations arranged when a gathering of radio experts from fifteen countries attended a television garden party at the Marconi research laboratories in Great Baddow, Essex, last week.

The experts, members of Study Group 11 of the International consultative committee, have recently seen television in France, Holland, and the U.S.A. After studying British television practice they held their first meeting in London on Saturday to discuss the technical aspects and possibilities of a common standard for European television.

During their visit to Marconi's, the group saw the 35 kW vision transmitter and a special eight-dipole aerial system which has been built for the B.B.C.'s next television station at Holme Moss.

Standardised for the States

AN INTERESTING development in standardisation is the production by Crompton Parkinson Ltd., of a range of a.c. motors which conform with common American and Canadian frame sizes and ratings. Produced in sizes from 1 to 20 h.p., they should encourage trade with North American markets, a field in which Crompton Parkinson are already prominent. To give the greatest possible interchangeability to the range, the motors are being made in standard frames with alternative horsepower ratings, so that British requirements for a compact motor can be met in addition to American needs.

Consumers query Tariff Increase

DISTURBED at the thought of the increased B.E.A. bulk tariff eventually resulting in more expense to the consumer, Eastern Consultative Council is asking for further information about the increase and how the Board propose to meet it.

At their meeting in London on Friday, Alderman W. J. Bennett, chairman of the council and a member of Eastern Board, reviewed the position at some length. Already, he said, because of the coal clause in the tariff, Eastern Board was paying more than most Boards for its electricity. Yet more than 60% of that current was generated outside the area, where the coal charge was lower.

According to Eastern Board's annual report, the first year's operation had resulted in a loss of £335,000. Now, on the basis of last year's maximum demand the Board would be called upon to pay at least another £250,000. What the council wanted to know was whether that increase was likely to be passed on to the consumer at some future date.

Other members of the council supported the chairman's opinion, and a resolution was adopted calling for further information on the increased bulk tariff.

Grave concern was also expressed by the chair-

The First Half-Century

Writing on the subject of motor-car design, the New York *Electrical Review* startles one with the remark that "horse-back riding as a means of transit, and sword-play as a means of defence, have disappeared from the face of the earth." The sensible suggestion is made that with certain types of automobile the carriage might be built so as to be entered from the front, there being no horse there any longer to block the way. Indeed, generally the view is maintained that the whole construction and appearance of the motor carriage needs revolutionising so that the "electro-mobile vehicle" should proclaim the thing it is and not go around forlornly like "an ordinary vehicle seeking the departed spirit of its horse."—*From our issue of May* 10, 1900.

man at the B.E.A.'s apparent change of policy over load shedding. After a member of the council had pointed out that 15,000 consumers' supply in Norwich was recently cut off for a whole morning, Ald. Bennett explained that the B.E.A. had changed its technique with regard to load shedding.

Previously, during a time of peak demand, the policy had been to drop the voltage or frequency. Then if the high demand continued, the load was shed by cutting off a number of consumers. B.E.A. had now decided not to drop the voltage or frequency. Instead, a block of consumers would be cut off straight away. The Board had already protested at this new arrangement, which not only lowered their prestige, but meant a loss of consumer hours and revenue.

No Revival of Causeway Trams

NOTWITHSTANDING the recent flat refusal of the Government of Northern Ireland to subsidise the Portrush-Giant's Causeway electric tramway, to enable it to continue its existence, local authorities in Londonderry and Antrim Counties are making a strong effort to have the service restored. The local authorities maintain that this, the first hydro-electric tramway in the world, was a great asset in the tourist season. In reply to a question in the Northern Ireland Parliament recently, Mr. W. V. M'Cleery, Minister of Commerce, said that the Ulster Transport Authority declined to acquire the Giant's Causeway line unless it was assured of a subsidy to cover any unavoidable loss on the operation of the services. While sympathising with those who deprecated the closing down of the tramway, he regretted that he could not recommend that such financial assistance should be provided.

Improved 16 mm Film Screening

ONE OF THE drawbacks of 16 mm film projection has hitherto been poor illumination of the screen, especially in large halls. But on Thursday, for the first time in this country, a 16 mm sound projector was demonstrated that combines the economy of an incandescent lamp with the advantages of arc lighting.

The new projector, the "Guild-Arc"—of French design and manufacture—is sponsored in this country by the Guildhall Trading Co. Ltd. For normal running a 750 or 1,000-watt lamp can be used. The arc, using 5 or 6 mm carbons which last for almost three hours, is contained in a separate housing which can be changed over in a few minutes.

The projector will operate from a 15-amp power point. It retails at £348 15s. complete.

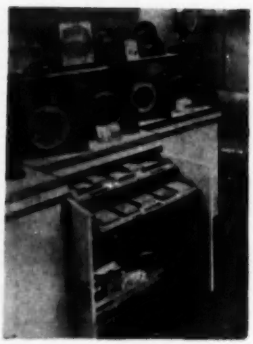
The "Supers" Exhibition

AN ELECTRICAL exhibition, organised by the North-West London branch of the Association of Supervising Electrical Engineers, was held in Harrow on Tuesday of last week. This, the first of its kind to be held by the A.S.E.E., was organised by Mr. P. A. Thorogood, the branch secretary. Exhibitors, most of whom demonstrated interesting items of apparatus manufactured by the firms with which they are connected, were: P. A. Thorogood (Sunvic Controls Ltd.), O. Westcott (G.M. Engineering Ltd.), E. Butler (Hall Telephone Accessories Ltd.), W. Blois (Dynamo and Motor Repairs Ltd.), R. Elliott (Crompton Parkinson Ltd.), T. Keir (Chilton Aircraft Co. Ltd.), R. Mathieson (Electrical Apparatus Co. Ltd.), H. Scard (Lancashire Dynamo and Crypto Ltd.), W. F. Parker (Troughton and Young Ltd.), E. Burgess (E.N.V. Engineering Co. Ltd.), Mr. A. T. Constable showed a private entry of a scale model stage with lighting equipment complete in every detail. E.I.B.A. and A.S.E.E. also had exhibits. The exhibition was officially opened by Mr. A. G. Ramsey, O.B.E., B.SC., M.I.E.E. (president, A.S.E.E.), and its success is encouraging the N.W. London branch (which holds the A.S.E.E. Branch Merit Cup) to contemplate a further exhibition on a larger scale at some future date.

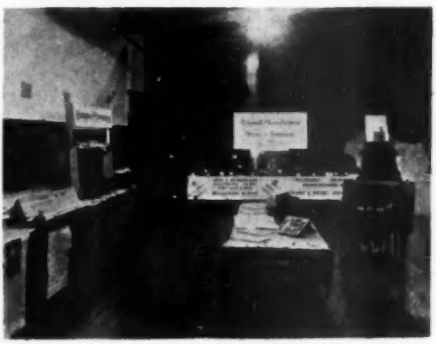
Company meets Overseas Agents

THE COMPANY'S first attempt to bring together its agents overseas, a sales convention for European agents, was held last week by Allbright and Wilson Ltd. At the various conferences representatives were told of the importance the company was placing on export sales.

Besides meeting members of the home sales



Left: Clock and watch division of S. Smith and Sons (England) Ltd., have inaugurated a travelling showroom. Luxuriously appointed, it includes an air conditioning plant and a miniature cine-projector. Our photo shows the neat storage unit



Right: Section of the A.S.E.E. (N.W. London Branch) members' exhibition at Harrow

staff, the agents were conducted round the company's works at Oldham and Widnes. A visit was also paid to the Memorial Theatre in Stratford-on-Avon. The convention closed with a farewell luncheon at the Dorchester Hotel, London, on Monday.

B.I.F. Review of Exhibits

WE REGRET that two errors occurred in our review of exhibits being shown at the B.I.F., Castle Bromwich, published in last week's issue. First, one of International Combustion's exhibits was misspelt as "Dynacone" instead of "Dynocone," and second, the Telegraph Construction and Maintenance Co. Ltd., was wrongly entitled the Telephone Construction and Maintenance Co.

I.E.E. Measurements Section Lecture

THE ANNUAL lecture of the Measurements Section of the I.E.E. was delivered last week by Professor L. F. Bates, who discussed "Some Recent Ideas and Experiments in Magnetism." He began by reviewing the "domain" theory first propounded by Weiss in 1907. This theory assumed that ferro-magnetic materials consisted of "domains" each magnetised to a saturation point dependent on the absolute temperature. Owing to the random orientation, however, the cumulative effect was usually small. Upon application of an external field, the "domains" reorientated themselves and an intense external magnetic effect became apparent. However, this ample attack left much unexplained. The problem of strained crystals and domain boundary phenomena arose. It was then assumed that the "domains" did in fact possess boundaries in which the magnetic vectors changed direction, and that these boundaries had a thickness proportional to the square root of the exchange energy divided by the insentropic energy per cubic centimetre.

The extension of the "domain" theory to include small triangular "domains" to close the internal flux paths was then explained, and the successive stages of magnetism as it increased described. The lecturer concluded by showing lantern slides of specimens of ferric material, polished, covered with a colloidal suspension of iron, and then put into a magnetic field, in which the flux bypassing the "domain" boundaries was clearly visible, thus proving the existence of these boundaries and verifying the underlying theory.

Scope for Hydro-electric in East

SOME impressions of future industrial developments in four important Eastern countries were given by Mr. Maurice Watt of the Federation of British Industries at a London press conference last week. In each, reported Mr. Watt, there was a genuine desire for trade with the U.K., the quality of British goods was highly regarded and British commercial integrity highly respected.

In PAKISTAN industrial development depended to a considerable extent on the further extension of electric power and water supplies. Although British exports were high, German and Japanese competition was increasing, especially in heavy engineering projects.

The INDIAN GOVERNMENT was encouraging industry and several new industries were being established. These included a dry core cable factory, a heavy electrical plant manufacturing project, radar and radio equipment manufacture, and telephone equipment. Less than 2% of the hydro-electric potential had been tapped, and work on some of the six main combined hydro-electric and irrigation schemes and fifteen lesser projects had been slowed up because of financial and supply difficulties.

Japan had recently concluded a trade agreement with BURMA, and goods were beginning to pour in. Increasing competition must also be expected from India and Australia.

Of various schemes of development in CEYLON, the most important were a hydro-electric project now in progress and a plan for the generation of electricity and supply of irrigation to an area of some 60,000 acres.

Peak Frean's floodlit tower in Bermondsey

Time for Floodlighting

OUR PHOTOGRAPH shows the famous clock tower of Peek Frean and Co. Ltd., in Bermondsey, London, where four Benjamin Type "J" floodlights have just been installed. Each fitted with spreader glass and 1,500-watt g.s. lamps, the floodlights have a universal movement with external control. A pre-setting device on both the horizontal and vertical axis returns the projector to its original position after cleaning or lamp renewals.

The 90 ft tower was erected in 1866 as part of the original factory. It is mainly because of local public interest that the floodlighting has been renewed.

Lighting Rio

FOLLOWING a successful demonstration of B.T.H. fluorescent lighting in Rio de Janeiro, the authorities there have placed an order for a system which, when completed, will be among the largest in the world. The thoroughfare to be illuminated is the Avenida Brasil, an extremely busy highway carrying an immense volume of traffic. More than 300 fluorescent street lighting lanterns, each containing three 5 ft 80-watt lamps, will be mounted on concrete standards.

Industrial Electronics

A SERIES of four lectures on industrial electronics by members of the staff of Mullard Electronic Research laboratories begins tonight at the Engineering Centre, 351 Sauchiehall Street, Glasgow, C.2. At 7.30 p.m., B. E. Noltingk will talk on "Ultrasonics." The other lectures and speakers in the programme are: June 8: "Some Industrial Measuring Instruments," H. A. Dell; September 14: "Photoelectric Devices," J. A. Jenkins; and October 12: "Vibration Test Methods and Measurements," by H. A. Dell and B. E. Noltingk.

NEWS IN BRIEF

W. T. Glover and Co. Ltd., estimate that about 2,000 people will be visiting their Trafford Park works on Saturday, for the annual works open day.

Half-yearly Court of the Governors of the Commercial Travellers' Association is to be held at 4b Fredericks Place, Old Jewry, E.C.2, at 12 a.m. on June 17.

Annual reunion and dinner of the Old Centralians Midland branch takes place tomorrow at the Imperial Hotel, Temple Street, Birmingham, at 6.30 p.m.

Although passengers expressed their approval, Salford's experimental fluorescent lighting in buses will not be carried farther because of rising working costs.

Copies of the I.E.E. annual report for 1949-50 and accounts for the year ended December 31, 1949, can be obtained by members on application to the secretary. The annual general meeting takes place on Thursday, May 25, at 5.30 p.m.

An article on "Saving Petrol with Battery Electric Vehicles," featuring some of the many types made by Brush Electrical Engineering Co. Ltd., is included in the latest issue of *Transportation*, the Goodyear Tyre journal.

Second of six sister ships for B.E.A., the *Barford* (4,600 tons) was launched by Wm. Pickersgill and Sons Ltd., at Sunderland last week. Mrs. J. S. Pickles, wife of the chairman of S.W. Scotland Board, performed the ceremony.

During a three-day visit to this country, French sales managers toured the Perivale factory of Hoover Ltd.

Latest date for applications for the Women's Legion scholarship in aeronautical engineering (value £150) has been extended to May 31. Forms are obtainable from the Women's Engineering Society, 35 Grosvenor Place, S.W.1.

Warrington, Rugby League challenge cup winners at Wembley on Saturday, carried out their final training preparations at "Vacuna," the St. Helens Cable and Rubber Company's sports club in Stoke Poges, Bucks.

A special exhibition showing the application of Celanese plastics to various trades and industries is being currently held at Celanese House, Hanover Square, W.1. It will remain open until June 16.

With a specially designed stand representing a lattice aerial mast, the microphone shown in our illustration will be used at future Radio Industries Club meetings. Names of presidents and chairmen of the club are engraved on the base.

Questions in Parliament

Scientific Resources

In a Private Members' motion, Mr. M. P. Price urged that there should be the fullest development and utilisation of Britain's scientific resources and manpower with a view to ensuring effective progress in the development of industry, agriculture and colonies, and a material improvement of the economic position. He asked if the scientific workers in the various research institutions were sufficiently aware of the problem of applying the results which they had obtained to industry on the factory floor? This country had the best scientists in the world for fundamental research, but we were behind other countries, particularly the United States, in the application of science to industry. He urged that more attention be paid in future to technical school and technical colleges. Seconding the motion, Mr. Erroll referred to the tremendous utilisation of scientific resources by private enterprise during the past 25 years, quoting as one example, the British electrical manufacturing industry. Heavy plant, generating and distribution equipment had benefited enormously from the industrial utilisation of science, and in the lighter end, in the development of new forms of lighting such as fluorescent lighting, private industry had made full use of the scientific resources of this country. Before the war there was more outdoor fluorescent lighting on our roads than in the rest of the world put together.

During the lengthy debate, Mr. W. Wells asked if the Government were prepared favour-

ably to consider taking what action is in their power to promote the formation in London of a science centre? Such a building should accommodate the D.S.I.R., the Royal Society and the Central Scientific Library. Replying to the debate, Mr. H. Morrison, remarked that he too had taken the view that if the three great research bodies and a number of similar organisations, could be placed in a single area to form a great centre of science, probably in London, it would be a very worthy thing to do.

In principle the idea was accepted by the Royal Society and others and the Government, and it was hoped to proceed with the plan at a not too distant future. The Government had already promised help in finding a suitable site for the project.

Japanese Copper

Mr. J. Grimston referred to the recent shipment to Europe of copper at £90 a ton by Japanese manufacturers, and asked the Minister of Supply if he proposed to take steps to ensure fair competition for the trades affected. Mr. Strauss replied that the copper was exported from Japan in August last at £90 a metric ton f.o.b., when the U.K. price was £113 10s. a long ton delivered. At that time the equivalent American price was £117 5s. a ton f.a.s. New York. After allowing for costs and freights there was little difference in the prices, but the question of Japanese competition was one for the President of the F.B.I.

Poles and Cables

When Mr. Crouch asked the Minister of Supply if he would increase the supplies of poles and cable to enable some of the arrears of electricity services to be cleared up, Mr. Strauss answered that he was not aware of any such shortages.

Coal Prices

The Minister of Fuel and Power was asked if he would consider establishing basic standards for coal, based upon calorific value, in supplementation of the present system. Mr. Noel Baker replied that the National Coal Board's price structure could not be based solely upon calorific values in industrial coals; factors other than calorific value must also be taken into account. Broadly speaking, the present prices of different varieties of coal did reflect both their calorific values, and their other important characteristics, e.g. size, ash, moisture and sulphur contents, etc.

Television Wire Broadcasts

Replying to a question by Mr. Grey, Mr. Ness Edwards, Postmaster-General, stated that he was prepared to issue licences for television wire broadcasting on terms corresponding in general to those applicable to sound wire broadcasting. The detailed arrangements were not, however, yet complete and the industry was to be consulted on technical matters.

Municipalities Reserve Funds

Lt.-Comdr. Hutchinson asked the Minister of Fuel and Power if he could now make a statement about the disposal of the reserve funds of former local authority electricity undertakings in South-East Scotland. Mr. Noel Baker answered that representations had been received and were under consideration. It was a complex matter involving questions of law as well as of finance.

Kafue Project

Mr. J. Grimston asked when it was proposed to start erection of a dam on the Kafue River, Northern Rhodesia, for the large-scale generation of electricity. Mr. J. Griffiths answered that a decision whether or not to carry out this project, which could not be considered separately from the Kariba Gorge project, must await the recommendations of the Commission mentioned earlier. Mr. Grimston then asked if the Commission were investigating both cases, for he understood it was concerned with the Kafue scheme only. To this, Mr. Griffiths agreed, but he emphasised that the investigation into the one would affect considerations regarding the other.

Electric Supply News

Luton

The new 22 kV substation at Sundon, with lines to Puddlehill and Tebworth, was formally inaugurated by Mr. C. T. Melling, chairman of the Eastern Electricity Board, recently. Cost of the scheme is £160,000.

Meaford

Application has been made to the Minister of Fuel and Power to consent to the extension of the Meaford generating station by the addition of a new section to be known as Meaford "B." This will comprise four 60 MW turbo-alternators and four boiler units each of 515 klb/hr capacity, with ancillary plant and three reinforced concrete cooling towers.

Renfrew

At the meeting of the County Council last week, it was reported that it is now the national policy of the Electricity Boards to ask for a contribution towards the cost of laying electric cables where the revenue, in the opinion of the Board, would not give a reasonable return. Remarking that it had been intended to provide gas for cooking and electricity for lighting for Elderslie East second housing development—comprising 114 houses—the county clerk stated that the Electricity Board intimated that unless the Council reconsidered that decision, the Board would require to ask for a contribution of £2,000 towards the cost of laying service cables, as the revenue they would receive from the houses provided with a dual service would

represent a return of approximately 10% of the capital expenditure involved. The Council decided to adhere to their previous decision and to take up the matter with the Board.

South Western Board

This Board has now announced that domestic consumers to whom the Clow surcharge applied are to be given a reduction of 0.16d. p.u. during the quarter commencing with the first meter reading after May 21.

St. Helens

The consent of the Minister of Fuel and Power has been received by the Merseyside and North Wales Division to the erection of the first section of the Bold (St. Helens) power station. This is to house two 30 MW turbo-alternator sets with the associated boiler plant, etc, the units being programmed for commissioning in 1953 and 1954 respectively. The coal for the boiler plant will be obtained direct from the Bold Colliery, the developments for which are in hand by the N.C.B. The Division has also applied for consent to install the third and fourth generating sets, which will complete the "A" station. Provision has been made for the erection of a further station on the same site with a capacity of 120 MW, bringing the total capacity of plant to 240 MW.

LIGHTING SCHEMES

Alsager.—The U.D.C. has decided to proceed with the installation of sodium street lighting.

Bridlington.—The Council has rejected the recommendation of the Highways Committee to install sodium lamps on the main roads. A member said he was convinced the present lighting could be very good if the fittings were cleaned and bulbs renewed. The borough engineer is to prepare a specification for a decorative lighting scheme not to exceed £3,000.

Kidderminster.—With the contract for gas street lighting due to expire soon, the Corporation is obtaining estimates for electric lighting.

Machynlleth.—The Merseyside and North Wales Electricity Board is to prepare a scheme for lighting the main streets of the town, at an estimated cost of £6,000.

Ossett.—The Corporation is to examine specimen electric street lighting installations with a view to possible conversion of the existing gas lighting.

Padiham.—The U.D.C. is to install sodium lighting on the main Burnley-Padiham road from Whitegate to Memorial Park. Cost £3,000.

Stoke-on-Trent.—The T.C. has approved a recommendation of the Highways and Plans Committee for the installation of fluorescent lighting at Crown Bank, Hanley.

Company Activities

Allen West & Co.

Group net profit for the year to January 31 was £280,255 (*£244,371*), after all charges including tax. The final dividend is 7½% and bonus 2½% (*same*) on the increased capital. The charge for U.K. taxation is £327,330 (*£328,255*). Profit attributable to the holding company is £279,466 (*£243,582*). To general reserve £150,000 (*£200,000*).

Babcock and Wilcox Ltd.

Consolidated trading profit for 1949 was £2,156,794 (*£1,659,439*), after charging depreciation £432,282 (*£409,141*), and directors' remuneration £42,276 (*£40,019*). Add dividends on trade investments £91,377 (*£61,101*), on Government and other securities £26,352 (*£29,904*), making £2,274,523 (*£1,750,444*). Profits tax takes £347,663 (*£266,104*), income tax £755,919 (*£623,531*), and taxation reserve being initial allowances equalisation £100,000 (*£1,115*); making net profit of £1,070,941 (*£859,694*). Proportion attributable to minority members is £4,436 (*£923*), plus sundry capital profits of £115,993 (*£34,795*). Consolidated net profit attributable to Babcock and Wilcox £1,182,498 (*£893,566*). With £199,267 (*£186,303*) brought in, there is £1,381,765 (*£1,079,869*) available. To dividends £448,676 (*£363,056*). The parent company has placed to research and development reserve £150,000 (*nil*), general reserve £396,029 (*£400,000*), leaving £180,711 (*£164,238*) carried forward.

B.E.A.

The new £150 million British Electricity 3½% guaranteed stock 1976-79, offered at £99, for which application lists were opened last Friday, was over subscribed, it was stated last weekend. Dealings in the stock took place this week at a very small premium.

British Vacuum Cleaner Mfg. Co.

Profit for the year to September 30, 1949, was £35,197 (*£11,093*) after all charges including tax are deducted. Dividend is again 20%.

Drayton Regulator (Holdings)

Net profit was £110,416, after charging to depreciation £10,583 and directors' remuneration, etc., £5,697. Taxation absorbs £57,914, leaving balance of £52,416. Bad debts £1,500, premium on share accounts £1,665, Preference dividend of subsidiary (now redeemed) £549. Ordinary dividend of 15% £6,187, leaving £83,479 carried forward.

Ever Ready Trust

Gross revenue for the year to March 31 last was £39,713 (*£36,945*). Directors' remuneration absorbs £1,907 (*£2,160*), audit fee £52 (*same*), general expenses £2,390 (*£1,279*), leaving £35,364 (*£33,454*). There is £12,100 (*£14,083*) brought in, after deducting £3,977 tax claim disallowed. To tax—less £951 provision no longer required—

£16,591 (*£13,310*), final Ordinary and Deferred dividend 6% (*8%*), making 11% (*same*), takes £18,150, leaving £12,723 carried forward.

Heatrae Ltd.

For the year to February 28 last, there was a net loss of £246, as compared with a net profit of £11,637, after tax, for the previous year. Tax required nil (*£12,103*), deferred repairs charged against reserve £3,673 (*nil*). Ordinary dividend 12½% (*same*), and there is £10,246 (*£14,755*) carried forward.

Johnson and Phillips Ltd.

For 1949 the balance from trading account incorporating Johnson and Phillips South Africa (Pty) Ltd. and Johnson and Phillips Australia (Pty) Ltd. was £606,870 (*£610,805*), plus income from investments £15,961 (*£19,188*), transfer fees £126 (*£91*), making £622,958 (*£634,595*). To directors' fees £3,750 (*same*), audit fee, etc., £2,025 (*£1,828*), loan and bank overdraft interest £8,022 (*£20,632*), depreciation £53,527 (*£49,787*), pensions, benevolent fund, etc., £31,051 (*£56,257*), taxation £268,000 (*£258,000*), expenses of bonus share issue £2,787 (*nil*), written off value of shares of Godfrey Pty Ltd. nil (*£5,160*), leaving net profit of £253,793 (*£239,181*). With £123,337 (*£144,782*) brought in there is £377,131 (*£383,963*) available. To 7½% interim dividend on increased capital £55,016 (*£44,014*), special stock reserve £50,000 (*£4,000*), research and development account £50,000 (*same*), capital reserve nil (*£118,198*), contingencies reserve (South Africa) nil (*£400*), leaving £167,099 carried forward.

Laurence, Scott and Electromotors

Trading profit for 1949 was £381,269 (*£323,876*). To depreciation £36,663 (*£28,421*), directors' fees £1,200 (*£1,050*), directors' remuneration £31,503 (*£28,260*), pension fund £10,000 (*£9,000*), annuity scheme £5,000 (*£4,500*), profits tax £42,500 (*£38,000*), income tax £120,000 (*£110,000*), leaving net profit of £134,403 (*£104,645*). With £7,475 (*£8,588*) brought in, there is £141,878 (*£113,233*) available. To Preference dividends £10,791 (*£10,609*), capital redemption reserve £20,000 (*same*), contingencies reserve £40,000 (*nil*), staff pensions £35,000 (*nil*), general reserve nil (*£45,581*), dividend of 12½% (*same*) £27,568, leaving £6,519 carried forward.

Metropolitan Electric Cable & Construction Co.

Trading profit for 1949 was £123,900 (*£101,050*), plus other income, making the total £125,379 (*£102,639*). Directors' emoluments absorb £3,845 (*£3,813*), audit fee £325 (*same*), depreciation £6,128 (*£6,232*), deferred repairs £1,084 (*nil*), leaving net profit before tax, £113,997 (*£92,269*). Taxation takes £52,000 (*£50,400*), leaving £61,997 (*£41,869*), plus £93,904 brought in (*£64,985 after transfer of £50,000 to assets replacement reserve*). To general reserve £30,000 (*£8,000*), final dividend 5%, making 15% £4,950 (*same*), leaving £120,951 carried forward.

Parnall (Yate)

Consolidated balance of profits for 1949 including net special credits from war contracts, etc., of £66,987 (*£178,002*), was £83,888 (*£118,390*). Plus taxation provision no longer required £50,000 (*£100,000*), and deferred repairs no longer required nil (*£5,325*), the total is £133,888 (*£223,715*). Depreciation absorbs £31,624 (*£32,805*), audit fee £2,003 (*£1,643*), directors' remuneration £8,559 (*£7,079*), contingencies reserve nil (*£90,000*), taxation £11,500 (*£56,000*), leaving balance of £80,202 (*£36,188*). With £68,129 (*£76,686*) brought in, there is £148,331 (*£112,874*) available. To general reserve nil (*£25,000*), patents, patent rights, etc., in subsidiaries' books, written off £59,078 (*nil*), dividend 5% (*same*) £20,625, leaving £68,012 carried forward, plus outside shareholders' interest in subsidiary £616.

Dividends Declared

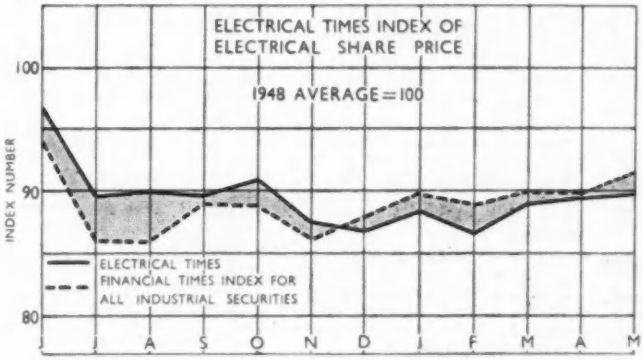
Kerry's (Gt. Britain). Final dividend of 8¾%, making 12½% (*15%*). Net profit was £81,683 (*£167,432*) before taxation.

Louis G. Ford. Final dividend of 20%, making 30% (*same*). Net profit £65,154 before tax.

National Electric Construction. Dividend of 10%. Profit after all charges including taxation was £45,979 (*£43,879*).

Power Securities Corpn. Dividend of 6% (*same*).

Tube Investments. Interim Ordinary dividend of 12½% (*same*).



SHARE PRICES

Although the Financial Times index jumped to 91·5% of the 1948 average, electrical share prices remained steady during April. Our index from the quoted prices of the Ordinary shares of 19 electrical companies rose only 0·1% to 88·9%

Commercial Information

CONTRACTS OPEN

HOME

May 12.—Belfast T.C. Repairing steel duct-work at Harbour power station (Specification No. G.144). Electricity Dept., East Bridge St., Belfast. Deposit £1 1s.

May 12.—Belfast T.C. 33 kV and lower voltage transformers and CO_2 firefighting equipment. Merz and McLellan, Engineers, Carliol House, Newcastle-upon-Tyne. Deposit £5 5s. (See our Apr. 14 issue.)

May 12.—N. Riding Education Committee. Electrical installation at new county primary school at Saltburn-by-the-Sea. F. Barraclough, Secretary, Education Offices, County Hall, Northallerton.

May 12.—Walton and Weybridge U.D.C. Supply, delivery, and erection of electrically-driven sewage pumping plant at Apps Court pumping station. Engineer and Surveyor, Council Offices, Walton-on-Thames.

May 13.—Glasgow T.C. Supply of 12 electric traction batteries for Cleansing Dept. Director of Cleansing, 33 Stockwell St., Glasgow C.1.

May 13.—Hastings T.C. Electrical installation to 43 houses at Hollington estate. Borough Engineer, 37 Wellington Square, Hastings.

May 15.—Belfast T.C. Supply of electrical lighting fittings for use in new buildings at Orthopaedic Hospital, Greenisland, for N.I. Tuberculosis Authority. City Surveyor's Dept. (Architectural Section), Room 85, City Hall, Belfast.

May 15.—Lancaster T.C. Supply of 83 street lighting lanterns, with lamps, etc., for Class 2 "A" lighting on trunk road A.6. City Engineer, Town Hall, Lancaster. (See our May 4 issue.)

May 15.—Lancaster T.C. Supply and erection of 69 Class "A" street lighting columns on trunk road A.6. City Engineer, Town Hall, Lancaster. (See our May 4 issue.)

May 15.—Musselburgh T.C. Erection of lamp standards and installation of sodium street lighting at Eskview Terrace and Monktonhall Terrace. Burgh Surveyor, Municipal Offices, High Street, Musselburgh.

May 15.—Sutherland C.C. Electrical work for 8 houses at Camore, 4 at Golspie, 48 at Lairg, and 2 at Melvich. Architect, E. W. Brannen, Carnegie Buildings, Dornoch. Deposit £5 5s.

May 19.—Edinburgh T.C. Electrical installations for 172 houses on Old Saughton housing area. City Architect, City Chambers, Edinburgh.

May 19.—Lancashire. Year's supply of twin lighting flex lampshades and lampholders, dry batteries and bulbs. Chief Officer, County Fire Brigade H.Q., "Hazelmere," Garstony Rd., Broughton, Preston.

May 20.—Annan T.C. Provision of 13 tubular steel columns, 25 brackets and 28 lanterns, with 240 W mercury electric discharge lamps; erection of 22 columns and installation of equipment on trunk road A.75. A. Knox, Town Clerk, Town Hall, Annan, Dumfriesshire. (See our Apr. 20 issue.)

May 20.—Sunderland T.C. Electrical installation in 276 houses on Pennywell estate. Borough Architect, Grange House, Stockton Rd., Sunderland. Deposit £1. (See our May 4 issue.)

May 22.—Batley T.C. Supply and erection of 17 electric street lamps on Leeds-Huddersfield trunk road. Borough Engineer, West House, Hanover St., Batley.

May 22.—Belfast. Electrical installation at Downpatrick Chest Hospital. W. Harvey, Secretary, N. Ireland Tuberculosis Authority, 27 Adelaide St., Belfast.

May 22.—Brighouse T.C. Installation of electric wiring and fittings for 139 houses on Smith House estate. Borough Engineer: H. A. Sneezum, Commercial Street, Brighouse.

May 22. — Manchester T.C. Electrical installation for adaptations to provide police divisional headquarters at St. Joseph's Buildings, Longsight. City Architect, Town Hall, Manchester. Deposit £1 1s. Advertised in this issue.

May 22.—Musselburgh T.C. Electrical work for 27 houses at Beach Lane and Links Avenue. Burgh Surveyor, Municipal Offices, High St., Musselburgh.

May 22.—Thirsk R.D.C. Internal wiring of 18 houses on various sites. Architects: Needham and Thorp, 6 High Petergate, York.

May 23.—Southend-on-Sea T.C. New electrical installation for electrical machines laboratory, London Road Schools. Architect to Education Committee, Southend. Specifications obtainable on May 8. (See our May 4 issue.)

May 25.—Clutton R.D.C. Electrical installation in 12 houses at Camely, 20 at Chilcompton, 20 at Clutton, and 10 at West Harp Tree. Thomas and Morgan and Partners, 23 Gelliwastad Road, Pontypridd. Deposit £1 1s.

May 25.—Rothwell U.D.C. Electrical wiring of 64 houses on Laurence Villa site, Woodlesford. Architect, Civic Buildings, Rothwell.

May 29.—Penzance T.C. Installation of electric motors, gearing, etc., for operation of Penzance floating dock gates. D. J. Beattie, Town Clerk, Municipal Buildings, Penzance.

June 6.—Manchester E.C. Electrical engineering equipment for Municipal College of Technology. Chairman, College of Technology sub-committee, Education Offices, Deansgate, Manchester 3. (Advertised in this issue.)

June 8.—Camberwell T.C. Installation of cremation furnaces at Honor Oak crematorium. Borough Engineer and Surveyor, John Clapp, Town Hall, Camberwell, S.E.5. (Advertised in this issue.)

June 12.—New Windsor. Electrical installation to 30 houses to be erected on Imperial Road site. Borough Engineer, Kipling Memorial Building, Windsor. Deposit £1 1s. Advertised in this issue.

June 21.—N. Scotland H.E. Board. 132 kV double circuit steel tower overhead line (approx. 65 miles route length) between Boat of Garten (Inverness-

shire) and Aberdeen. Merz and McLellan, 39 Northumberland Street, Edinburgh 3. Deposit £2 2s. Advertised in this issue.

July 17.—Waterford C.C. Electrical services comprising lighting, cooking, laundry, sterilising and associated hospital equipment at Ardkeen Sanatorium. (Fourteen major buildings, covering 20 acres.) Engineer, N. Mathews, 104 Grafton St., Dublin. Deposit £15 15s.

No date stated.—Cupar. Electrical work for alterations to bank premises at 46 Crossgate. L. A. Rolland, Architect, Albion House, Shorehead, Leven, and 57 Crossgate, Cupar.

No date stated.—Houghton-le-Spring U.D.C. Supply and erection of reinforced concrete columns and other fittings in connection with conversion from gas to electric street lighting of part of road A.182. V. J. Hunter, Surveyor.

No date stated.—Lancashire C.C. Electrical installation at Sudell Rd. secondary modern school, Darwen. County Architect, County Offices, Preston. Deposit £2. (Application by May 13.)

No date stated.—Tranent T.C. Electrical work for 22 houses. R. M. Sorbie, Town Clerk, Tranent.

No date stated.—Peterborough T.C. Electric lighting and power installations to 12 old peoples' dwellings and 32 single bedroom flats on Dogsthorpe/Newark estate, Peterborough. F. J. Smith, City Engineer and Surveyor Town Hall, Peterborough. (Applications by May 20.) (Advertised in this issue.)

OVERSEAS

*Details of items marked * may be obtained on application to Room 1076, Board of Trade, Thames House, North Millbank, S.W.1, quoting reference.*

May 22.—Mysore. Suspension and strain clamps for electrical department of the Mysore Government. Secretary, Stores Purchase Committee, Bangalore. B.o.T. (Ref. CRE (IB) 51863/50)*.

May 23.—Tehran. Two diesel-electric generators for power stations at Tehran and Ahwaz. (850 and 550 h.p. respectively.) Iranian State Railways, Tehran, B.o.T. (Ref. CRE (IB) 51939/50.

June 9.—Victoria. One Turbidimeter complete with accessories. State Electricity Commission of Victoria, 22-32 William Street, Melbourne, Victoria. Advertised in this issue.

June 27.—Wellington. 150 miles of steel-covered aluminium conductor, 400 aluminium jointing sleeves and various accessories. New Zealand State H.E. Department, Wellington. Ref. S.C.1981.

Jul. 4. — Southern Rhodesia. Three 7·5 MVA 88/11 kV ON/OFB transformers and three star/star auxiliary transformers for delivery to Que Que Electricity Supply Commission, Southern Rhodesia. B.o.T. (Ref. CRE (IB) 51709/50).*

CONTRACTS PLACED

B.E.A.—During the past month the B.E.A. have placed contracts for power station, switching and transforming station and transmission equipment amounting to £2,343,211. Principal contracts include: Deptford generating station: 3,000 V switchgear (B.T.H.); Doncaster generating station: Foundations and river works (Higgs and Hill Ltd.); Chadderton generating station, Oldham, Lancs.: Cooling tower (Fred Mitchell and Son Ltd.); Stourport 'B' generating station, Worcs.: Electrostatic precipitator (Sturtevant Engineering Co.); Keadby generating station, Lincs: Coal handling plant (Spencer (Melksham) Ltd.); East Yelland generating station, nr. Barnstaple; Structural steelwork for main buildings (John Lysaght's Bristol Works Ltd.); Foundations, culverts, sidings, etc. (Taylor Woodrow Construction Ltd.) and 33 kV 750 MVA Switchgear (Ferguson, Pailin Ltd.); Holloway Road and Lough Road substations, Islington, London: 66 kV, 11 kV and auxiliary cables (Pirelli-General Cable Works Ltd.); Canterbury substation: 30 MVA 132/33 kV transformers and earthing transformers (Bruce Peebles and Co. Ltd.); Doncaster substation: 60 MVA 132/66 kV transformers and auxiliary transformers (Ferranti Ltd.); Longton substation, Staffs.: 60 MVA 132/33kV trans-

Your Queries — Answered

"Ritter" dental lathe, makers of? E.E.—Ritter Dental Ltd., which is now part of the organisation of L. Porro Ltd., 64 New Cavendish Street, London, W.1. (18089)

"Colombo" toasters, makers of? T.E.—Colombo Products, of Kingston, but no trace of this firm can be found at the present time. (18119)

"Fluoradise" fluorescent fitting, suppliers of? T.E.—Drubel Distributors Ltd., 39a Stafford Rd., Croydon, Surrey. (18124)

"Tireless Tim" floor polisher, makers of? T.E.—Hogan and Wardrop Ltd., 47 Caledonian Road, London, N.1. (18093)

"Durodome" reflectors, makers of? T.E.—We presume that this enquirer refers to "Duo-Dome" made by Holophane Ltd., 53 Elverton St., S.W.1. (18097)

"Bedal Aerofridge" refrigerator, makers of? T.E.—These were made by the British Electric Domestic Appliances Ltd., but the manufacture of this product was dropped before the firm's assets were taken over by Thorn Electrical Industries Ltd. No spares are available from stock, but Time Engineers, of 60 Southend Road, Rainham, Essex, offer to assist. (18114)

"Brittains" motors, makers of? T.L.—Brittains Electric Motor Co. Ltd. were taken over by Hopkinsons Electric Co. who have, in turn, been acquired by Brush Electrical Eng. Co. Ltd., Birchgrove, Cardiff. (18074)

The above are selected from questions we have answered this week. If you have a query, send it to us.

ANSWER WANTED

Photo changing (turning) device for display purposes, makers of? B.W. (18129)

formers and earthing transformers (Met-Vick Electrical Co. Ltd.); Capenhurst substation, Cheshire: 132 kV 2,500 MVA switchgear (English Electric Co. Ltd.); Lydney substation, South Wales: 30 MVA 132/33 kV transformers and earthing transformers (Hackbridge and Hewittic Electric Co. Ltd.); Macclesfield substation, Cheshire: 45 MVA 132/33 kV transformers and earthing transformers (Hackbridge and Hewittic Electric Co. Ltd.).

PRICES OF CABLE METALS AND OTHER MATERIALS
(at Tuesday night)

	£ s. d.	*New York price*
COPPER, electrolytic	162 0 0	£156 0 0
Delivered in 2nd and 3rd month after order ...	163 10 0	—
Delivered in 4th, 5th and 6th month after order	165 0 0	—
LEAD, good soft pig (foreign)	90 0 0	90 0 0
,, ,, ,, ,, "English" quality	91 10 0	—
Delivered in 2nd and 3rd month after order, plus	1 0 0	—
TIN (99-99.75%) ... ... (Cash)	592½-593½	—
,, (3 months)	592½-594	—
ALUMINIUM, commercial purity (del.) ...	112 0 0	—
ZINC	99 10 0	92 0 0
ARMOURING:		
Galv. Steel Wire (0.104 in.)	40 10 0	—
Mild Steel Tape (0.04 in.)	26 0 0	—

GAZETTE ANNOUNCEMENTS

COMPANIES ACTS

Voluntary Liquidation

Speedy and Eynon Ltd., electrical and mechanical engineers, 163a Strand, London, W.C., and at Birmingham, Smethwick and Stoke. A statement of affairs at a recent creditors' meeting showed liabilities amounting to £58,245, of which £38,485 was due to trade creditors; £2,329 to expense creditors; £2,946 to the Inland Revenue; and £14,485 in respect of loans. The assets were estimated to produce £86,539 and after allowing £25,540 for preferential claims, there were net assets of £60,999, or a surplus as regarded the directors of £2,754. The issued capital amounted to £3,000 and, so far as the shareholders were concerned, there was a deficiency of £246.

The Secretary reported that the company was registered in 1932 with a nominal capital of £3,000, and acquired the assets of a partnership business of electrical contractors. Up to 1938 the business of the company was carried on in a small way, and in that year almost the entire shareholding was acquired by the late Mr. R. S. Whaley. Under his directorship the business was carried on with success for 10 years. The electrical contracting part of the business was continued and developed and, by reason of his knowledge, he introduced other forms of engineering contracting. Net turnover had risen from £15,000 in 1939 to £241,000 in 1948.

In 1949, Mr. Whaley, the managing director, died, resulting, according to the Secretary, in financial embarrassment to the company. By April of this year shortage of capital caused difficulties with suppliers. Several summonses and writs for varying amounts were received and these were met up to the point when two writs were issued coinciding with a period when the company was called upon to meet large wage bills. It became clear that it was unwise in the interests of shareholders and creditors to continue trading without adequate capital. Judgment had been obtained on both the writs and execution was levied and, in order to avert the sale of the company's assets, the bank advanced the cash required.

A resolution was passed confirming the voluntary liquidation of the company with Mr. A. W. Hunter, of Latham and Co., 185/188 High Holborn, London, as liquidator. A committee of inspection was also appointed.

Raylite Displays Ltd., illumination engineers, East Road, Cambridge. At a creditors' meeting recently, a statement of affairs disclosed unsecured liabilities amounting to £4,363, of which £3,084 was due to loan creditors and £1,278 to the trade. In addition there were preferential claims of £136 and a sum of £780 due to a debenture holder. Assets were estimated to produce £840. After allowing for the preferential claims the remaining assets were insufficient to the extent of £77 to meet the debenture claim, and there was, therefore, a total deficiency of £4,440.

The company was registered in September, 1946, and the issued capital totalled £1,400. Trading accounts for the first year's trading showed a loss of £1,922, and for the two years to June 30, 1949, a further loss of £3,061 was incurred.

A resolution was passed confirming the voluntary liquidation of the company with Mr. W. L. Downey, of Sussex House, Hobson Street, Cambridge, as liquidator, together with a committee of inspection.

Norman Cooper (Isle of Wight) Ltd., electrical engineers, St. John's Road, Sandown, Isle of Wight.

At a recent meeting of creditors a statement of affairs showed liabilities amounting to £1,421 against assets of £976, thus leaving a deficiency of £445.

The company took over an existing business in March, 1947. Trading accounts covering the period January 1, 1947 (prior to incorporation), to March 31, 1948, showed a turnover of £6,260 and a net profit of £548 before charging directors' salaries of £240. In the following year turnover amounted to £5,105 and showed a net profit of £106 before charging directors' salaries of £308. Trading figures for the last period of trading were not available.

It was decided to confirm the voluntary liquidation of the company with Mr. N. W. Osborne, of Rushton, Osborne and Co., 11-12 Finsbury Square, London, E.C.2, as liquidator, together with a committee of inspection.

BANKRUPTCY ACTS

Receiving Orders

High Court of Justice.—D. R. Williams, 307 Harrow Road, Paddington. Receiving order on creditors petition, dated Apr. 20.

Leeds.—F. McMahon, 3 Exeter Street, Leeds, formerly carrying on business at Camden House Chambers, Leeds. Public examination on June 20 at 10.30 a.m., at The Court House Albion Place, Leeds.

TRADE NOTES

Metal Prices.—The price of good soft pig lead was increased by £2 to £90 a ton delivered, and that of zinc by £2 to £99 10s. a ton delivered, as from May 5.

B.E.A.M.A. Members.—The following firms have been elected members of the Association: Electric Construction Co, Ltd. and Nevelin Electric Co. (both transformer and converting plant sections).

Factory Extension.—Thorn Electrical Industries Ltd. propose to extend their Merthyr factory.

E.W.F.—Algers Wholesale Supplies Ltd., 46 Dock Street, Newport, Mon., have been elected a member of the Electrical Wholesalers Federation.

Change of Address.—The West London and Western district offices of the Export Credits Guarantee Department of the Board of Trade has moved to Victory House, 99-101 Regent Street, W.1. Tel. :Regent 0682.

Indian Imports.—Under Part II of the Indian Import Trade Control Schedule, a variety of goods have been allocated quota percentage. Importers may base their applications for licences on these percentages of half their imports from soft currency areas during any year between 1937-8 and 1948-9. Among the goods, with quota percentage are: motors and generators, 40%, electric insulation (excluding ebonite rods, tubes and sheets), 50%; lamp bulbs (excluding torch bulbs), 10%; electric control gear and transmission equipment, instruments, batteries and accumulators, 100%; and rubber insulated cables greater than ¼in. dia., 10%.

Nuts and Bolts.—As from May 3, the maximum price of rivets over ¼ in. diameter was increased and the price control on stainless steel nuts and aircraft riveted bolts was ended, under a new Order.

BUSINESS PROSPECTS

HOME

Bakewell R.D.C. Erection of 10 houses at Eyam. A. Lowcock, Architect, King Street, Bakewell.

Berwick-upon-Tweed. Erection of 40 houses at Prior Park. Borough Surveyor, Municipal Buildings, Berwick-upon-Tweed.

Brighton T.C. Erection of a factory at Hollingsbury estate light industrial area. D. J. Howe, 26-30 King's Road, Brighton.

Chesterfield T.C. Erection of 80 houses on Newbold estate. Borough Engineer and Surveyor, Town Hall, Chesterfield.

Colchester. Erection of 15 houses on Shrub End site. J. S. Orchard, Borough Engineer, 64 West Stockwell Street, Colchester.

Denton U.D.C. Erection of 26 houses for No. 6 scheme and 14 houses No. 7 scheme for Lees House Farm site. Engineer and Surveyor, Town Hall, Denton.

Droitwich. Erection of 6 pairs of bungalows at Stalls Farm estate. Borough Engineer and Surveyor, Town Hall, Droitwich.

East Riding E.C. Erection of county secondary school on site between Hedon and Preston. Chief Education Officer, County Hall, Beverley.

Eastbourne T.C. Erection of 24 flats in Bourne Street, pavilion at Redoubt bowling greens, rebuilding of public lavatories, hostel block in the grounds of "Aldro," Darley Road, and Fire Service garage. Borough Engineer, 2-4 Saffrons Road, Eastbourne.

Gainsborough U.D.C. Erection of 42 houses and 12 bungalows on White's Wood Lane housing site. Architects, Wm. Saunders and Partners, 24 Castle Gate, Newark-on-Trent.

Glenrothes Development Corporation. Erection of 118 houses at Woodside near Markinch, Fife. The Secretary, Auchmuty House, Markinch, Fife.

Hornsea U.D.C. Erection of 74 houses and flats on Hornsea Burton estate. H. Wilkinson, Engineer and Surveyor, Town Hall, Hornsea.

Ilkley U.D.C. Erection of 24 houses at Burley-in-Wharfdale. A. Skinner, Surveyor's department, Chantry Drive, Ilkley.

Isle of Wight R.D.C. Erection of 8 houses at Weston and 14 at Arreton. Architects, E. L. Smith and Son, Melville Chambers, Sandown, I.O.W.

Leeds. Erection of artisans' workshops at Storthes Hall hospital, Kirkburton. Wm. A. Shee, Secretary to the Board, 29-31 Eastgate, Leeds 2.

Long Eaton U.D.C. Erection of 32 houses for housing scheme 18b Wilsthorpe Road. F. Turner, Engineer and Surveyor, Town Hall, Long Eaton.

Macclesfield. Erection of a new institute in Chelford Road, Broken Cross, for Broken Cross Institute. Architect, P. Wright, 5 Jordansgate, Macclesfield.

March U.D.C. Erection of 42 houses on Peas Hill. R. W. H. Jakens, Architect, 4 Elwyn Road, March.

Newcastle-upon-Tyne E.C. Submitted to Ministry of Education a £17,000 scheme for conversion of gas lighting to electricity in 8 schools.

Northamptonshire C.C. Erection of junior school on Avondale site, and secondary modern school on Henry Gotch site, Avondale, secondary modern school at Donnington Road, Wellingborough. County Architect, County Hall, Northampton.

Wellington R.D.C. Erection of 22 houses at Donnington. J. Brian Cooper, Coleridge Chambers, 177 Corporation Street, Birmingham 4.

West Riding. Erection of 22 police houses at various places. West Riding County Architect, County Hall, Wakefield.

OVERSEAS

Canada. Mr. Harry H. Schwartz of Electrodesign, of 445 St. Peter St., Montreal, requires information on radar and microwave electronic components made by U.K. manufacturers.

U.S.A.—Messrs. Slaybaugh and Thompson of 100 West 13th Avenue, Denver 4, Colorado, are interested in receiving offers from British manufacturers and exporters able to supply: electrical conduit, electrical fittings, such as outlet boxes; insulating board, electric wire, both bare and covered.

NEW COMPANIES

Extracted from the Register issued by Jordan and Sons, Ltd., 116 Chancery Lane, London W.C.2.

Buchan and Hampton Ltd., 15 South Farm Rd., Worthing. Manufacturers of and dealers in refrigerators, refrigerating, cold storage, heating, air conditioning and lighting machinery, etc. Cap.: £1,500. Dirs.: W. Buchan and F. Hampton.

Glasby, Leibrick and Co. Ltd., 9a Carlton Rd., Worksop, Notts. Electrical and general engineers. etc. Cap.: £200. Dirs.: J. A Leibrick and W. H. Glasby.

Goodman (Fluorescent) Ltd., 9 Percy St., Tottenham Court Rd., W.1. Lighting, elec., wireless and general engineers, etc. Cap.: £1,000. Dirs.: F. Fraiman and Gertrude M. Gilmour.

Kingsclere Lamp Co. Ltd. Manufacturers of and dealers in electric table and other lamps, etc. Cap.: £100. Subs.: M. Golend, 58 The Avenue, Hatch End, Middx; W. Rolak.

Loma Electronic Equipment Ltd., 217 Hoe St., Walthamstow, E.17. Cap.: £100. Dirs.: T H. Oakman and S. Y. Logan.

Morton and Trent (Southern) Ltd., 5 Midhurst Parade, Prince Ave., Southend-on-Sea. Hire-purchase of radio and fine electrical equipment, etc. Cap.: £5,000. Dirs.: N. Gentry and Mary Gentry.

Ranco, Ltd. Manufacturers of and dealers in thermostatic and pressure controls, etc. Cap.: £250,000. Subs.: F. Hopton and M. J. Wordley, Austin Friars House, 6 Austin Friars, E.C.2.

Refrigeration (Mitton) Ltd., 46a Cecil St., Carlisle. Distributors, manufacturers and repairers of refrigerators, cold storage machinery, etc. Cap.: £10,000. Dirs.: A. Mitton and Mrs. K. Mitton.

Starvacs, Ltd., 242 Goldhawk Road, Shepherds Bush, W.12. To take over business of dealers in electrical domestic appliances carried on at 267 Lower Addiscombe Road, Croydon, by T. A. Scrutton and J. M. Wilson. Cap.: £5,000. Dirs.: J. M. Wilson, R. E. Langham and Lilian V. Scrutton.

T. and H. Electrical Service Ltd., 776 Barking Rd., E.13. Electrical engineers and contractors, etc. Cap.: £2,000. Dirs.: A. F. Todman, J. R. Hammond, C. W. Leech.

Varicol Signs Ltd., 15 Dover St., Coventry. Manufacturers of electrical advertising signs, etc. Cap.: £3,000. Dirs.: L. C. H. Smith, Winifred E. Smith, J. A. Munden and T. Buckler.

Wellgate Electrical Co., Ltd., 33 Gt. James St., Bedford Row, W.C.1. Cap.: £2,000. Dirs.: H. H. Rodwell, R. J. Gale, H. Burke and G. A E. Goulstone.

Wilfred Horsfall, Ltd., 111 Poulton Street, Kirkham. Manufacturers of and dealers in electrical and mechanical apparatus of all kinds, etc. Cap.: £3,000. Dirs.: W. Horsfall and Mrs. E. E. Horsfall.

William F. Smith and Son (Cardiff), Ltd., 1 Adelaide Pl., Cardiff. Manufacturers of and dealers in dynamos, motors, armatures, etc. Cap.: £2,000. Subs.: Margaret Wakeham and Joan Lewis.

TRADE MARKS

This information is extracted from the Official Journal by permission of the Controller.

Aeroflex Ceram. 685,062. Class 9. Electric fuses. Parmiter, Hope and Sugden Ltd., Fluvent Electrical Works, Newton Avenue, Longsight, Manchester.

Dynocone. 684,782. Class 7. Continuous centrifuging machines for use in the separation of liquids from solids. International Combustion (Holdings) Ltd., 19 Woburn Place, London, W.C.1.

Informator.—685,384. Class 9. Combined filmstrip projectors and sound disc amplifiers for use as instructional and teaching apparatus. A. J. Lockwood, 10 Golden Square, London W.1.

Lammaid. 685,572. Class 7. Washing machines and clothes wringers. Huwood Components Ltd., Glasshouse Street, St. Peters, Newcastle-on-Tyne 6.

Prestcold. 681,520. Class 11. Refrigerating machines. Pressed Steel Co., Ltd., Cowley, Oxford.

Stonegate (with design). — 686,062. Class 9. Electric accumulators and electric batteries. Lithanode Co., Ltd., 190 Queenstown Rd., Battersea, S.W.8.

Synchroster. B.673,214. Class 9. Telegraphic, remote control, signalling, measuring, indicating and registering instruments and apparatus. Chadburns (Liverpool) Ltd., Park Lane, Aintree, Liverpool.

Winolite. 684,730. Class 9. Illuminated advertising signs Bush Signs Ltd., 43 Brunswick Street East, Hove, Sussex.

MEETINGS TO NOTE

THURSDAY, MAY 11

I.E.E. (Extra meeting). — "The Analysis of Action Potentials in Electromyography." P. Bauwens. Institution, Savoy Place, W.C.2.—5.30 p.m.

I.E.E. (Bristol students).—Annual general meeting. Electricity Showrooms, Bath.—7 p.m.

FRIDAY, MAY 12

JNR. INSTN. ENGRS. — "Hydro-Electric Development." Tenth Quadrennial Gustave Canet memorial lecture. G. F. Kennedy, Royal Society of Arts, John Adam Street, Adelphi, W.C.2.—7.30 p.m.

E.P.E.A. (Southern meter engineers' group).—"The Operation and Maintenance of Electrical Protective Gear on Secondary H.V. Transmission Systems." F. H. Last. Caxton Hall, Westminster, S.W.1.—6.30 p.m.

A.S.E.E. (Liverpool branch).—"Interference Suppression to Radio and Television Receivers," Prof. F. J. Teago. Laboratories of Applied Electricity, Ashton Street, Liverpool, 7 p.m.

MONDAY, MAY 15

A.S.E.E. (Stockport branch).—"Research Engineering." White Lion Hotel, Underbank, Stockport, 8 p.m.

E.T.U. Annual conference. Ramsgate.

TUESDAY, MAY 16

I.E.E. (Measurements section).—Section Conversazione. Institution, Savoy Place, W.C.2.—5.30 p.m.

WEDNESDAY, MAY 17

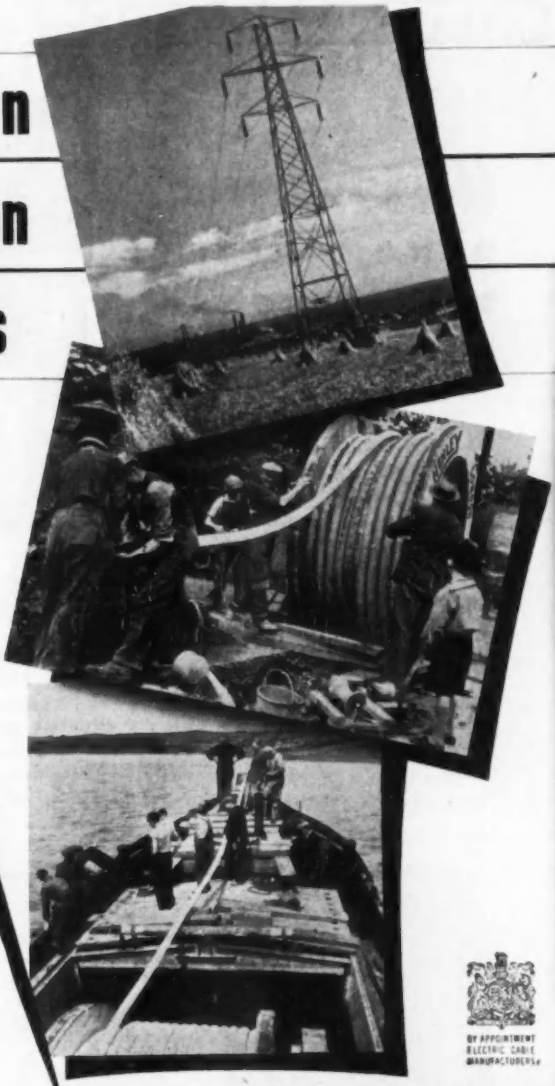
I.E.E. (Supply section). — "A Review of Research in Electricity Supply," C. W. Marshall. Institution, Savoy Place, W.C.2.—5.30 p.m.

I.E.E. (S.W. sub-centre).—"Tidal Power and the Severn Barrage," H. Headland. Faraday Hall, St. Austell.—3 p.m.

THURSDAY, MAY 18

I.E.E.—Commemoration of the Centenary of the birth of Olivier Heaviside. 3 p.m.—"Heaviside the Man," Sir George Lee. 5 p.m.—"An Appreciation of Heaviside's Contribution to Electromagnetic Theory," Prof. W. Jackson. "Heaviside's Operational Calculus," Prof. G. van der Pol. Institution, Savoy Place, W.C.2.

Specialists in Super-Tension Installations



Henley's specialise in the complete manufacture and installation of super-tension cables and accessories and in the erection of overhead transmission lines.

Ask for Henley Super-Tension Literature.

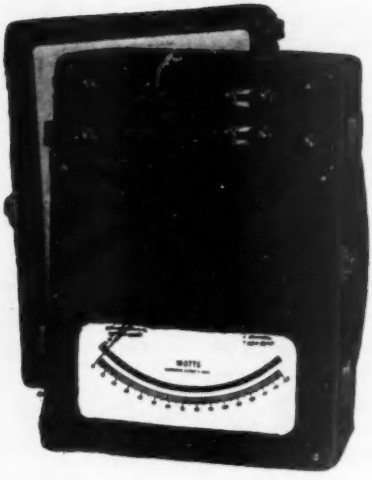
See the
HENLEY
WIRES, CABLES AND ELECTRICAL DISTRIBUTION EQUIPMENT ON THE
CMA
STAND
C413/312
B.I.F.

BY APPOINTMENT ELECTRIC CABLE MANUFACTURERS

HENLEY

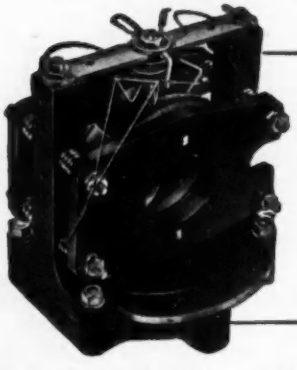
W. T. HENLEY'S TELEGRAPH WORKS CO. LTD., 51-53 HATTON GARDEN, LONDON, E.C.1

FEATURES OF WESTON SUPERIORITY



Weston
DYNAMOMETER SUB-STANDARD INSTRUMENTS

This latest development of the well-known 'Weston' sub-standard Wattmeter is made in three models, each of high-grade dynamometer type, designed for a wide range of precision measurements. The standard series is particularly suitable for meter standardisation and for use as a transfer standard between A.C. and D.C. circuits. Type 2 is recommended for low power factor circuits and Type 3 for higher power frequencies. Similar in size and design, each is housed in a lightweight Bakelite case, with easy reading 6″ scale, knife-edge pointer and anti-parallax mirror. The moving element is fitted with spring-loaded jewels, double magnetic shielding is employed and each instrument carries a certificate of individual performance and guarantee of accuracy to 0.25%. Ample voltage and current ranges are available by simple switching which can be safely applied when the instrument is on load. Model S67 (as illustrated). Size 11″ × 9½″ × 6½″. Weight 10 lbs. (approx.)



EXTREME RIGIDITY. An unique feature of these 'Weston' models is the self-contained assembly independent of the casing, thus ensuring extreme rigidity. The whole instrument is housed as one complete unit in an attractive Bakelite case with leather carrying strap and detachable cover. Ample shielding and the absence of metal parts eliminate errors due to external magnetic fields and eddy currents.

SANGAMO WESTON LIMITED

ENFIELD, MIDDLESEX · Telephone: Enfield 3434 (6 lines) & 1242 (4 lines) Telegrams: Sanwest, Enfield.

DEPOTS AT GLASGOW, NEWCASTLE-ON-TYNE, MANCHESTER AND WOLVERHAMPTON.

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CLASSIFIED ADVERTISEMENTS

OFFICIAL TENDERS AND APPOINTMENTS

WANTED · FOR SALE WORK WANTED

Those wishing to advertise in these pages should send the text to the Classified Advertisement Dept., Electrical Times, Sardinia House, Sardinia St., W.C.2, before 10 a.m. on TUESDAY of week of issue. Official Displayed Advertisements are charged at 35s. per inch, and all other classified advertisements at 2s. 6d. per line. Situations Wanted will be published four times for twice the single insertion rate. Fee for Box No. and postage on replies is 2s.

TENDERS INVITED

CITY OF MANCHESTER EDUCATION COMMITTEE

Extension to the Municipal College of Technology

ELECTRICAL ENGINEERING EQUIPMENT

TENDERS are invited for the following:—

Oscillographic Equipment, comprising 9 cathode-ray oscilloscopes, amplifier units and 1 recording camera. Reference No. 246.

Laboratory Instruments, comprising 2 valve voltmeters, 15 portable sub-standard instruments and 10 first-grade instruments. Reference No. 247.

Six Audio-frequency Oscillators. Reference No. 252.

Relays and associated equipment for demonstration protective systems. Reference No. 259.

Tenderers should be familiar with the provisions of Standing Order 76 (a and b) of the Manchester City Council, a copy of which, together with more detailed specifications regarding the above items, may be obtained from the Principal, College of Technology, Manchester 1.

Tenders (in duplicate) in sealed envelopes endorsed "College of Technology, Electrical Equipment," should be addressed to the Chairman, College of Technology Sub-Committee, Education Offices, Deansgate, Manchester 3, so as to reach him not later than 10 a.m. on Tuesday, June 6, 1950.

The Committee do not bind themselves to accept the lowest or any tender. (E 555)

ROYAL BOROUGH OF NEW WINDSOR

30 Traditional Houses

ELECTRICAL INSTALLATION

TENDERS are invited for the electrical installation to 30 houses to be erected on the Imperial Road site.

Copies of the specification, form of tender, and conditions of contract, may be obtained from the Borough Engineer, Kipling Memorial Building, Windsor, upon payment of a deposit of one guinea, which will be returned upon receipt of a bona fide tender, and the return of all documents.

Tenders in a plain sealed envelope endorsed "Tender for Electrical Installation—30 Houses" must be delivered to the undersigned not later than noon on Monday, June 12, 1950.

The Council do not bind themselves to accept the lowest or any tender.

R. WEBSTER STORR,
Town Clerk.

Municipal Offices,
Kipling Memorial Building, Windsor.
May 3, 1950. (E 610)

NORTH OF SCOTLAND HYDRO-ELECTRIC BOARD

132 kV OVERHEAD TRANSMISSION LINE

TENDERS are invited for the supply, delivery and erection of a 132 kV double circuit steel tower overhead line, approximately 65 miles route length, between Boat of Garten (Inverness-shire) and Aberdeen.

Copies of the tender document may be obtained on and after May 17, 1950, on application to the Engineers, Messrs. Merz and McLellan, 39 Northumberland Street, Edinburgh 3. Applications should be accompanied by a cheque for £2 2s. which will be returned on receipt of a bona fide tender.

Tenders in duplicate enclosed in a sealed cover and endorsed on the left hand corner "Contract C/52/BGA/1" must reach the subscriber not later than June 21, 1950.

The Board do not bind themselves to accept the lowest or any tender.

W. D. D. FENTON,
Secretary.

16 Rothesay Terrace, Edinburgh 3.
May 5, 1950. (E 593)

STATE ELECTRICITY COMMISSION OF VICTORIA

22-32 William Street, Melbourne, Victoria, Australia

THE Commission is inviting quotations for one Turbidimeter. Range for water turbidities 0·100 parts per million. Sensitivity minimum 1·0 parts per million, also calibrated for use in sulphate determination. Complete with all necessary accessories. Spare parts to be quoted separately. For use on 230 V a.c.

The above meter should be based upon the "Tyndale" effect. Full particulars of the apparatus offered to be submitted with quotation.

Quotations endorsed "Quotation No. 5874" are returnable at the Commission's Head Office, 22 William Street, Melbourne, Victoria, Australia, by June 9, 1950. The Commission does not bind itself to accept the lowest or any quotation. (E 597)

CITY OF MANCHESTER

THE Watch Committee invite tenders for the electrical installation required in connection with adaptations to provide Police Divisional Headquarters at St. Joseph's Buildings, Longsight, Manchester.

Specification may be obtained at the office of the City Architect, Town Hall, upon payment of £1 1s., which sum will be returned upon receipt of bona fide tender. All cheques and postal orders are to be made payable to the order of "The Corporation of Manchester" and crossed.

Sealed tenders, enclosed in the official envelope, to be delivered at the Town Hall, not later than 10 a.m. on Monday, May 22, 1950.

The Corporation do not bind themselves to accept the lowest or any tender.

PHILIP B. DINGLE,
Town Clerk.

Town Hall, Manchester.
May 1950. (E 596)

METROPOLITAN BOROUGH OF CAMBERWELL

PROPOSED EXTENSION, HONOR OAK CREMATORIUM. INSTALLATION OF FURNACES

THE Camberwell Metropolitan Borough Council invites tenders for the supply and installation of new Cremation Furnaces at Honor Oak Crematorium.

Forms of Tender, Conditions and other particulars may be obtained from Mr. John Clapp, B.Sc., A.M.Inst.C.E., Borough Engineer and Surveyor, to whom Tenders must be returned not later than 10 a.m. on Thursday, June 8, 1950.

DARRELL MUSKER,
Town Clerk.

Town Hall, Camberwell, S.E.5. (E 580)

CITY OF PETERBOROUGH

THE Council invites tenders from recognised Electrical Contractors for the electric lighting and power installations to 12 Old People's Dwellings, and 32 Single Bedroom Flats, on the Dogsthorpe/Newark Estate, Peterborough.

Drawings, Specifications and Forms of Tender may be obtained on application to Mr. F. J. Smith, M.B.E., A.M.I.C.E., City Engineer and Surveyor, Town Hall, Peterborough.

Applications, before noon on May 20, 1950, should be accompanied by a cheque to the value of £2 2s., made payable to the Peterborough City Council, which will be refunded on receipt of a bona fide tender or the return of the documents.

The Council does not bind itself to accept the lowest or any tender.

C. PETER CLARKE,
Town Clerk.

Town Hall, Peterborough.
May, 1950. (E 587)

APPOINTMENTS VACANT

BRITISH ELECTRICITY AUTHORITY

Yorkshire Division

GENERAL ASSISTANT ENGINEERS

APPLICATIONS are invited for the above appointments in the Divisional Technical Engineer's Department.

Applicants should possess technical qualifications to Higher National Certificate standard as a minimum, and should have had some experience in the commissioning and maintenance of protective gear either in Generating Stations or on Transmission Systems, or of modern high-voltage equipment. Training or experience in a manufacturer's works would be an advantage.

Conditions of service will be in accordance with the N.J.B. Agreement, the salary range being in accordance with Schedule "C," Grade 8, £437-£622 per annum.

Consideration will also be given to applicants having lesser experience or technical training for appointment as JUNIOR ENGINEERS, the salary range being in accordance with Schedule "C," Grade 9, £375-£522 per annum.

The appointment will be subject to the provisions of the Authority's superannuation scheme.

Forms of application may be obtained from the Divisional Secretary, British Electricity Authority, Yorkshire Division, British Electricity House, St. Mary's Road, Leeds 7, to whom completed forms must be returned within 14 days of the appearance of this notice.

G. A. VOWLES,
Divisional Controller.
(E 585)

UGANDA ELECTRICITY BOARD

APPLICATIONS are invited for the appointment of COOKERY DEMONSTRATOR in Kampala, Uganda.

Applicants should have had a good general education and a subsequent training in Domestic Science, and possess the E.A.W. Certificate.

Preference will be given to candidates who have had experience with electricity undertakings in the carrying out of public demonstrations of cooking with electric cookers.

The salary attached to the appointment is on the scale of £320 p.a. rising by £20 p.a. to £540. Commencing salary will be determined according to the candidate's age, qualifications and experience. In addition, free, partly furnished accommodation or an allowance in lieu will be granted.

The initial contract will be for a period of three years. Free passages to and from Uganda are provided plus three months' leave on full salary on termination of contract (or six months if contract is renewed).

Further information may be obtained from and applications should be addressed to Sir John Kennedy, O.B.E., M.I.C.E., M.I.E.E., Uganda Electricity Board, 129 Grand Buildings, Trafalgar Square, London W.C.2, within three weeks of the publication of this advertisement.

C. R. WESTLAKE,
Chairman.
P.O. Box 559, Kampala, Uganda. (E 556)

BRITISH ELECTRICITY AUTHORITY

APPLICATIONS are invited for appointment as SECOND ASSISTANT ENGINEER in the Co-ordination Section, Generation (Construction) Branch at Headquarters in London.

Appointments, which are superannuable, will be made according to qualifications and experience within Grade 3 of the National Joint Board Agreement, £719 to £969 per annum, rising ultimately to a maximum of £1,070 per annum, plus 5% London Allowance.

Those appointed will be required to assist a Senior Assistant Engineer responsible for co-ordinating generation construction work at a group of generating stations. They will be based at Headquarters in London but their duties will entail attendance at site meetings and visits to generating stations in various parts of the country.

Candidates should hold Associate membership qualifications of the Institutions of Mechanical or Electrical Engineers or other equivalent qualifications and should have practical experience in the construction of modern generating stations. This experience should include handling of contracts, preparation of commissioning programmes, practical experience of work on site and general co-ordination of the work from the inception of the scheme to ultimate commissioning.

Application forms may be obtained from Mr. D. Moffat, Director of Establishments, British Electricity Authority, British Electricity House, Great Portland Street, London W.1, and should be completed and returned to him not later than May 26, 1950.

Please quote reference A.E. 65. (E 595)

EASTERN ELECTRICITY BOARD

Chief Commercial Officer's Department

APPOINTMENT OF PRINCIPAL ASSISTANT

APPLICATIONS are invited for appointment as Principal Assistant at Headquarters, Wherstead, from candidates of suitable experience.

The successful applicant will be required to assist a Section Head and his previous experience should include all forms of utilisation for domestic, commercial, industrial and agricultural consumers, the negotiation of street lighting contracts, the preparation and operation of hire purchase and other promotional schemes and the general administration of the commercial side of the industry.

The position will be graded in accordance with the N.J.C. Salary Agreement Grade 8, £795 by £35 to £900 per annum. The salary would commence at a step in that grade commensurate with qualifications and experience.

The person appointed would be required to contribute to a Superannuation Scheme and may have to undergo a medical examination.

Applications should be addressed to the Chief Commercial Officer, Eastern Electricity Board, Wherstead, near Ipswich, so as to reach him within fourteen days of the appearance of this advertisement.

May 5, 1950. (E 594)

MERSEYSIDE AND NORTH WALES ELECTRICITY BOARD

METER REPAIRER (MECHANICIAN)

APPLICATIONS are invited for the appointment of Meter Repairer (Mechanician) in the Warrington District of the Board's No. 2 Sub-Area.

The duties will include repairs to indicating and recording instruments and the applicants should have had experience in instrument repair and micro-lathe work.

The position is subject to the conditions of the National Joint Industrial Council for the Electricity Supply Industry and the present rate of pay is 35·00d. per hour based on a 44-hour, 5-day week.

Applications, stating qualifications, experience and present appointment, should be submitted to the Manager, No. 2 Sub-Area, Merseyside and North Wales Electricity Board, Sandiway House, near Northwich, Cheshire, so as to be received not later than first post on Tuesday, May 23, 1950.

JAMES RANKIN,
Secretary.
(E 583)

NORTH WESTERN ELECTRICITY BOARD

No. 5 Sub-Area

SENIOR TESTING ASSISTANT (PROTECTION)

APPLICATIONS are invited for the position of Senior Testing Assistant (Protection), in the Technical Engineers' Department at the No. 5 Sub-Area Headquarters, Blackburn.

Candidates should have had a sound training in electrical engineering and should hold the Higher National Certificate or equivalent qualification.

The duties will include the testing, commissioning and routine maintenance of protective equipment installed in the Sub-Area system. Preference will be given to candidates with experience of instrument and meter testing.

The salary, which is provisional pending negotiations with the appropriate body, will be within the range £525 to £625 per annum. The post is superannuable.

Applications, stating age, education, qualifications and experience, etc., should be received by R. H. Harral, Esq., M.I.E.E., M.Inst.F., Sub-Area Manager, No. 5 Sub-Area, The North Western Electricity Board, Jubilee Street, Blackburn, not later than Saturday, May 27, 1950. (E 572)

LONDON ELECTRICITY BOARD

ENGINEER (CONSTRUCTION)

APPLICATIONS are invited for the following appointment in the Construction Branch of the Chief Engineer's Department in Central London:

Engineer (Construction) to supervise erection of various bulk supply sub-station sites within the Board's area, of heavy electrical plant, including transformers and switchgear, at working pressures of up to 66 kV, together with all auxiliary equipment and rotary converting plant. Applicants must have had previous experience of this work, both in the factory and in the field. Corporate membership of the Institution of Electrical Engineers and/or Institution of Mechanical Engineers would be an advantage.

The commencing salary will be from £750 per annum, dependent on qualifications and experience. This salary is provisional pending grading of the post under the revised agreement of the National Joint Board.

Application forms, obtainable from Establishments Officer, 46-47 New Broad Street, E.C.2, on receipt of an addressed foolscap envelope, should be returned duly completed not later than May 27, 1950. Please mark envelope EST/V/778/T. (E 599)

MIDLANDS ELECTRICITY BOARD

Central Gloucestershire Sub-Area

APPLICATIONS are invited for the position of DISTRICT SENIOR CLERK at each of the following Districts:—

(1) Stroud (Dudbridge, Stroud).
(2) Severn Vale (Chipping Sodbury).

The successful applicants will be responsible to the District Manager for the accountancy, secretarial and other clerical functions at the District. Candidates should have had similar administrative experience, preferably in the Electricity Supply Industry.

Salary and conditions of service will be in accordance with the National Joint Council Grade 4, £510-£570.

The successful applicants will be required to contribute to the Board's Superannuation Scheme if eligible.

Applications, stating age, education and experience, should be forwarded within 14 days to Mr. D. Holt, Manager, Central Gloucestershire Sub-Area, Midlands Electricity Board, 126 London Road, Gloucester.

A. STEPHENS,
Secretary.

May 2, 1950. (E 586)

MIDLANDS ELECTRICITY BOARD

Shropshire and Herefordshire Sub-Area

APPLICATIONS are invited for the position of DEMONSTRATOR in the Ludlow District of the Shropshire and Herefordshire Sub-Area.

Applicants must have had a good general education and the possession of a recognised Diploma in Domestic Science and Electrical Housecraft will be an advantage. Candidates must be able to conduct lecture demonstrations both in the showrooms and on consumers' premises, and to advise consumers on the selection and use of electrical apparatus.

Salary and conditions of service will be in accordance with the National Joint Council, Grade 1, within the range £310-£350, with further progress to £390 dependent upon a certificate of capability.

The successful applicant will be required to contribute to the Board's Superannuation Scheme if eligible.

Applications, stating age, education, details of training and experience, should be forwarded within fourteen days to: Mr. W. Winwood, Manager, Shropshire and Herefordshire Sub-Area, Midlands Electricity Board, Spring Gardens, Ditherington, Shrewsbury.

A. STEPHENS,
Secretary.
(E 561)

MIDLANDS ELECTRICITY BOARD

Shropshire and Herefordshire Sub-Area

APPLICATIONS are invited for the position of DEMONSTRATOR in the Wellington district of the Shropshire and Herefordshire Sub-Area.

Applicants must have had a good general education and the possession of a recognised Diploma in Domestic Science and Electrical Housecraft will be an advantage. Candidates must be able to conduct lecture demonstrations both in the showrooms and on consumers' premises, and to advise consumers on the selection and use of electrical apparatus.

Salary and conditions of service will be in accordance with the National Joint Council, Grade 1, within the range £310-£350 with further progress to £390 dependent upon a certificate of capability.

The successful applicant will be required to contribute to the Board's Superannuation Scheme if eligible.

Applications, stating age, education, details of training and subsequent experience should be forwarded within fourteen days to: Mr. W. Winwood, Manager, Shropshire and Herefordshire Sub-Area, Midlands Electricity Board, Spring Gardens, Ditherington, Shrewsbury.

A. STEPHENS,
Secretary.
(E 560)

MIDLANDS ELECTRICITY BOARD

Shropshire and Herefordshire Sub-Area

APPOINTMENT OF DRAUGHTSMAN

APPLICATIONS are invited for the above position at the Sub-Area Headquarters Office at Shrewsbury. The duties will consist of the preparation of working and detailed plans for sub-station buildings and switchgear layout. Some architectural experience will be an advantage.

The appointment will be in accordance with conditions of the National Joint Board, and the provisional salary will be £375 p.a. subject to negotiation.

Applications, stating age, qualifications, experience and present salary, should be sent within fourteen days to Mr. W. Winwood, Manager, Shropshire and Herefordshire Sub-Area, Midlands Electricity Board, Spring Gardens, Ditherington, Shrewsbury.

A. STEPHENS,
Secretary.
(E 601)

BRITISH ELECTRICITY AUTHORITY

APPLICATIONS are invited for the position as ASSISTANT to the DISTRIBUTION LIAISON TECHNICAL ENGINEER at headquarters in London.

Applicants should be Corporate Members of the Institution of Electrical Engineers or hold equivalent qualifications and preference will be given to candidates with an extensive knowledge and practical experience of the technical and administrative problems associated with the transmission and distribution of electricity in urban and rural areas and its utilisation by the consumer. Breadth of experience and adaptability are required and are more important than a highly specialised knowledge of a narrow section of the field.

The salary for the appointment, which is superannuable, will be in accordance with Grade I of the N.J.B. Agreement (£912 per annum to £1,285 per annum, including London Allowance).

Applications, giving full details of qualifications and experience, together with present salary, should be forwarded to Mr. D. Moffat, Director of Establishments, British Electricity Authority, British Electricity House, Great Portland Street, London W.1.

The latest date for the receipt of completed applications is May 26, 1950.

Please quote reference AE.59. (E 579)

HIS MAJESTY'S COLONIAL SERVICE

A VACANCY exists in the Colonial Engineering Service for a CHIEF ELECTRICAL ENGINEER in the Public Works Department, Colony of Aden.

Salary according to qualifications, experience and war service in the scale of £1,250 to £1,350 per annum, including expatriation pay. The post is permanent and pensionable and the candidates must be under 40 years of age and be Associate Members of the Institution of Electrical Engineers or possess equivalent educational qualifications. Candidates should have at least five years' practical experience in general electrical construction and maintenance, power generation and distribution and should have the administrative ability to take charge of the electricity department under the Director of Public Works.

Partly furnished quarters are available at low rentals. Free medical attention and free first-class passages for the officer and his wife and children are provided. Home leave on full pay at the end of each tour of 18 to 24 months at the rate of seven days for each month of residential service. Income tax at local rates.

Intending candidates should write for further particulars and application form to the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith Street, London S.W.1, giving brief details of age, qualifications and experience as soon as possible, quoting reference No. 27326/30. (E 571)

KENT COUNTY COUNCIL

APPLICATIONS are invited for an appointment as an ENGINEERING ASSISTANT (Electrical) in the Buildings Department at a salary within A.P.T., Grades I-III (£390-£495).

The post is superannuable and the successful candidate will be required to pass a medical examination.

Applicants must be capable draftsmen with practical experience in electrical installation work, and preference will be given to corporate members of the Institution of Electrical Engineers or to those holding the Higher National Certificate in electrical engineering. The commencing grade and salary will be dependent upon qualifications and experience.

Applications, on forms obtainable from the County Architect, Springfield, Maidstone, should be delivered to him not later than fourteen days after the appearance of this advertisement.

W. L. PLATTS,
Clerk of the County Council.

County Hall, Maidstone.
April 24, 1950. (E 527)

MIDLANDS ELECTRICITY BOARD

Central Gloucestershire Sub-Area

APPLICATIONS are invited for the position of WAYLEAVE OFFICER at the headquarters of the Central Gloucestershire Sub-Area.

Applicants should be experienced in the negotiation of Wayleave Agreements and have knowledge of valuation and compensation. Training in surveying and levelling would be an advantage.

Salary and conditions of service will be in accordance with the National Joint Council, Grade 2, £390-£450.

The successful applicant will be required to contribute to the Board's Superannuation Scheme if eligible.

Applications, stating age, education and experience, should be forwarded within fourteen days to: Mr. D. Holt, Manager, Central Gloucestershire Sub-Area, Midlands Electricity Board, 126 London Road, Gloucester.

A. STEPHENS,
Secretary.
(E 562)

BRITISH ELECTRICITY AUTHORITY

Eastern Division

APPLICATIONS are invited for the following appointment :—

STATION SHIFT CONTROL ENGINEER—Letchworth Generating Station.

Salary in accordance with the revised N.J.B. Schedule, Grade 10, Class " E " (£488-£502 per annum).

Applicants should have reached the standard of Ordinary National Certificate in Electrical Engineering or its equivalent, have experience in the operation of a switchboard at a generating station and be fully conversant with h.t. switching operations and protective systems.

The appointment will be superannuable in accordance with the British Electricity Authority and Area Boards' superannuation scheme.

Applications, stating age, experience and present position, should be sent to the Divisional Controller, British Electricity Authority, Eastern Division, Northmet House, Southgate, N.14, to arrive as soon as possible. Envelopes should be endorsed " Station Shift Control Engineer, Letchworth."

W. N. C. CLINCH,
Controller.

Northmet House, Southgate, N.14. (E 525)

NORTH WESTERN ELECTRICITY BOARD

No. 4 Sub-Area

ASSISTANT TO THE SYSTEM PLANNING ENGINEER

APPLICATIONS are invited for the position of Assistant in the System Planning Section of the Technical Engineer's Department.

The salary, which will be within the range of the Board's grade 2 Salary, i.e. £525 to £625 per annum, according to qualifications and experience, is provisional pending negotiation with the appropriate body, and will be subject to deductions for superannuation purposes.

Applicants should be experienced in planning and estimating for extensions of high voltage and medium voltage networks, substation design and network calculations and should possess some knowledge of protective equipment. Candidates should hold an Engineering Degree or be of Higher National Certificate standard.

Applications, stating age, education, qualifications and experience, present position and salary, should be received by G. A. Robertson, Esq., M.Sc., Tech., M.I.E.E., M.I. Mech.E., No. 4 Sub-Area Manager, The North Western Electricity Board, 40-41 Lune Street, Preston, not later than Saturday, May 27, 1950. (E 570)

BRITISH ELECTRICITY AUTHORITY

Eastern Division

APPLICATIONS are invited for the following appointment:—

SHIFT CHARGE ENGINEER, Great Yarmouth Generating Station.

Salary in accordance with the revised N.J.B. Schedule, Grade 7, Class "D" (£563-£573 per annum).

Applicants should have served an apprenticeship and obtained an Ordinary National Certificate in electrical and/or mechanical engineering or equivalent and possess experience in the operation of power stations.

The appointment will be superannuable in accordance with the British Electricity Authority and Area Boards' Superannuation Scheme.

Applications, stating age, experience and present position, should be sent to the Divisional Controller, British Electricity Authority, Eastern Division, Northmet House, Southgate, N.14, to arrive not later than May 19, 1950. Envelopes should be endorsed "Shift Charge Engineer, Great Yarmouth."

W. N. C. CLINCH,
Controller.

Northmet House, Southgate, N.14. (E 513)

MIDLANDS ELECTRICITY BOARD

Central Gloucestershire Sub-Area

APPLICATIONS are invited for the position of ASSISTANT WAYLEAVE OFFICER at the headquarters of the Central Gloucestershire Sub-Area.

Applicants should have some knowledge of valuation and compensation and be competent to assist in the negotiation of Wayleave Agreements.

Salary and conditions of service will be in accordance with the National Joint Council, Grade 1, £310-£490.

The successful applicant will be required to contribute to the Board's Superannuation Scheme if eligible.

Applications, stating age, education and experience, should be forwarded within fourteen days to: Mr. D. Holt, Manager, Central Gloucestershire Sub-Area, Midlands Electricity Board, 126 London Road, Gloucester.

A. STEPHENS,
Secretary.
(E 563)

BRITISH ELECTRICITY AUTHORITY

Southern Division

APPLICATIONS are invited for the following vacancies on the staff of the Transmission Engineer.

1. CLERK OF WORKS (CIVIL).

Candidates should be corporate members of one of the senior engineering institutions, and competent to deal with the supervision of contractors engaged on transmission construction work (civil). Salary range £579 to £731.

2. GENERAL ASSISTANT ENGINEERS.

(a) One with experience in the design, installation and maintenance of underground cables. Knowledge of oil-filled and gas pressure cables up to 132 kV would be an advantage.

(b) One with office experience in dealing with details of contract work for electrical transforming stations up to 132 kV.

Candidates should possess qualifications leading to corporate membership of a senior engineering institution. Salary range £437 to £586.

The above appointments are superannuable and subject to a satisfactory medical examination.

Forms of application may be obtained from the undersigned and must be returned not later than May 27, 1950.

P. D. A. OLIVER,
Division Secretary.

British Electricity House,
High Street, Portsmouth.
May 5, 1950. (E 596)

BRITISH ELECTRICITY AUTHORITY

London Division

EDUCATION AND TRAINING OFFICER

APPLICATIONS are invited from suitably qualified candidates for this position.

The duties of the successful applicant will be to cover the joint requirements in this sphere of London Electricity Board and the London Division of the British Electricity Authority with a total personnel numbering approximately 24,000.

Experience in the initiation and operation of training schemes for manual, technical, clerical, administrative and professional grades is essential.

Candidates should possess an appropriate degree or equivalent qualifications.

Salary will be within the scale £795 to £900 p.a. plus 5% London Allowance and in accordance with Grade 8 of the N.J.C. (Administrative and Clerical Grades) agreement.

The appointment will be subject to compulsory membership of the B.E.A. and Area Boards' Superannuation Scheme.

Applications, stating age, qualifications and experience, should be addressed to the Divisional Secretary, British Electricity Authority, London Division, Ergon House, Horseferry Road, Westminster, S.W.1, to be received within fourteen days of the appearance of this advertisement.

J. N. WAITE,
Divisional Controller.
(E 600)

A VACANCY occurs for a FOREMAN PIPE FITTER AND HEATING ENGINEER, must be fully conversant with maintenance and operation of Lancashire boilers, low and medium pressure steam plant, furnace work, and gas, water and air compressor services. Good disciplinarian. Redditch, Worcestershire area.—Write, giving full details of salary and past experience, to Personnel Manager, Box No. 1291, Electrical Times. (E 588)

DESIGNER wanted, North-West area. All types d.c. motors and generators up to 100 h.p. Works experience essential.—Apply, stating qualifications and experience to Box No. 1271, Electrical Times. (E 547)

DESIGNER/DRAUGHTSMAN required by the manufacturers of "Temco" electrical wiring accessories. Must be familiar with the light electrical apparatus industry. This post carries a good salary and offers scope for advancement for the right man.—Write, giving full details of experience, to Personnel Manager, Telephone Manufacturing Co., Ltd., Martell Road, West Dulwich, S.E.21. (E 521)

FITTERS AND WINDERS experienced in large repair shop practice, wanted urgently. —Apply, in person or writing, Dowding and Mills, Ltd., Camp Hill, Bordesley, Birmingham 12. (E 344p)

BOX No. replies to be addressed to the ELECTRICAL TIMES, Sardinia House, Sardinia Street, London W.C.2

ELECTRICAL DRAUGHTSMAN required by major oil company for service in the Middle East. Must have served five years' electrical engineering apprenticeship and have had five years' D.O. experience in connection with electrical layouts of large industrial plants with underground cable networks. Should possess Higher National Certificate; Graduate or Associate membership of a corporate engineering body desirable but not essential. Maximum age limit 35 years. Attractive salary plus generous allowance in local currency. Free passages out and home, free medical attention, kit allowance, good leave arrangements, pension scheme.—Write, giving personal particulars and details of qualifications and experience, quoting Dept. F.192, to Box No. 2693, at 191 Gresham House, E.C.2. Applicants without above requirements will not be considered. (E 536)

ELECTRICAL ENGINEERS required for service in Middle East. Applicants should (*a*) possess Ordinary or Higher National Certificate and have had full apprenticeship with heavy electrical equipment manufacturers or with a large colliery or allied fully electrified industry, or (*b*) possess a degree and have had two years' technical apprenticeship with similar firm to above. In each case applicants must have had at least three years subsequent experience on the installation and maintenance of heavy electrical equipment. Maximum age limit 35 years. Attractive salary, plus generous allowance in local currency, free passages out and home, free medical attention, kit allowance, good leave arrangements, pension scheme.—Write, giving personal particulars and details of qualifications and experience, quoting Dept. F.191, to Box No. 2693, at 191 Gresham House, E.C.2. (E 415)

ELECTRICAL INSPECTORS required by major oil company operating in Middle East. Applicants should have a wide experience of inspection and testing of motors, switchgear, and the electrical equipment associated with modern large generating stations, substations, and transmission and distribution networks with voltage range of 33 kV to 440 V. Knowledge of flameproof equipment an advantage. Possession of Higher National Certificate essential and qualifications up to A.M.I.E.E. desirable. Age limit 37 years. Attractive salary, plus generous allowance in local currency, free passages out and home, free medical attention, kit allowance, pension scheme, good leave arrangements.—Write, stating age and full details of qualifications and experience, quoting Dept. F.182, to Box 2533 at 191 Gresham House, E.C.2. (C 304)

ENGINEER required for electricity supply undertaking in Bagdad. Applications are invited from engineers age 30-40 with a sound technical training who have a wide practical experience in the operation, maintenance and administration of a modern steam power station of at least 15,000 kW. Plant erection and mains distribution experience would be an advantage.

Salary £120 per month plus high cost of living allowance (at present £22 10s. per month) plus free house with heavy furniture or monthly house allowance of £12.

Three-year contract, renewable, with first-class passage each way for successful applicant and family (if married). Three months leave on full pay in U.K. on completion of 24 consecutive months in Iraq, first-class leave passage being paid.—Box No. 1255, Electrical Times. (E 514)

ENGINEER DRAUGHTSMAN with experience in design, layout and installation of complete electrical equipment for gas and chemical plants, required by firm of engineers and contractors on N.E. coast.—Apply, stating age, experience and salary required, to Box No. 1273, Electrical Times. (E 550)

JUNIOR SALES ENGINEER. Electricity Meter Manufacturers seek young meter or instrument engineer with sound technical background for position of Junior Meter Sales Engineer. Duties commence with six months "study" course in factory, followed by appointment in the field under an experienced Senior Representative. Good salary and expenses with excellent prospects. Contributory pension scheme. — Applications, giving full particulars and if possible a recent photograph (which will be returned) to: Box No. E.T. 857, at 191 Gresham House, E.C.2, will be treated in strict confidence. (E 611)

JUNIOR ANALYTICAL CHEMIST required for cable company. Knowledge of rubber mixes an advantage.—Box No. 1259, Electrical Times. (E 532)

DRAUGHTSMEN required immediately with experience in design of structural steelwork, or platework, or pipework for steam boiler plant for priority contracts.

Apply:

John Thompson Water Tube Boilers Ltd.

Wolverhampton (E 522p)

LEE, BEESLEY & Co. Ltd.

6, WARWICK ROW, COVENTRY

APPLICATIONS are invited for the following positions for which first-class engineers are required:

ELECTRICAL CONTRACTING ESTIMATORS

Accustomed to large modern types of industrial and commercial electrical installations.

OUTSIDE PLANNING & SUPERVISING ENGINEERS

For electrical contracts having wide experience all types electrical installation.

COMPETENT JOURNEYMAN ELECTRICIANS

Fully skilled industrial-domestic installations. (E 609p)

JUNIOR DRAUGHTSMAN required for detail and assembly drawing, modifications and schedule preparation for manufacturers of electro-mechanical devices in West London area.—Write, full details of experience and salary required, to Box No. 1251, Electrical Times. (E 509)

LABORATORY MECHANIC required for the assembly of electronic equipment from circuit diagrams. West London area.—Applicants, giving details of age, qualifications and experience, should send to Box No. 6205, c/o Whites Ltd., 72 Fleet Street, E.C.4. (E 602)

MALE or female HEAD COST CLERK required.—Apply, stating experience, salary required, etc., to George E. Taylor and Co. (London) Ltd., 34 Southwark Bridge Road, S.E.1. (E 539)

MECHANICAL OR ELECTRICAL ENGINEER, with degree or equivalent, required immediately to take charge of a section of the Development Dept. of a well-known Engineering Company in the S.W. London area. Applicants must have plenty of initiative and possess a progressive outlook. They should give full details of their training and experience and should also state the salary they require.—Box No. 1265, Electrical Times. (E 543)

OVERHEAD LINESMEN, experienced erection 6,600 V, 12-18 months contract in Syria, required by large London firm engineers and contractors.—Box No. 1277, Electrical Times. (E 566)

SALES MANAGER. Measurement Ltd., Terminal House, Grosvenor Gardens, London S.W.1, require services experienced Electricity Meter Engineer as Area Sales Manager, to supervise important existing contracts and develop business in meters and new electro-technical products. This post involves negotiations with B.E.A. executives of high technical calibre. In consequence applicant must possess excellent knowledge meter technology and basic electrical science in addition to resolute and well-balanced disposition. Engagement on Period Agreement at attractive remuneration with expenses and car provided, also contributory pension scheme. Write fully, and if possible, enclose recent photograph (which will be returned).—All applications, to be addressed to: Chairman of Company, will be treated as strictly confidential. (E 613)

CHARGE ENGINEERS

POWER STATION CHARGE ENGINEERS urgently required by major oil company for service in the Middle East. Must hold at least Higher National Certificate in Electrical Engineering and have had not less than three years' experience in the operation of large modern steam power stations with thorough knowledge of the routine operation of water-tube boilers, turbo-alternators, E.H.T. switchgear and auxiliary plant. Present position in this country should be not less than Grade 8a, Class "B" or Grade 8, Class "G" on N.J.B. Scale. Age not over 35 years. Married accommodation available. Commencing salary not less than £900 per annum, plus generous allowance in local currency. Free passages out and home; free medical attention, kit allowance, good leave arrangements. Pension scheme.

Write, giving age, personal particulars, and full details of qualifications and experience, quoting Dept. F.189 to

Box 2536, at 191 Gresham House, E.C.2. (E 284p)

SWITCHGEAR ESTIMATOR

For South Africa

SWITCHGEAR ESTIMATOR is required for the works of Johnson and Phillips, Ltd., at Johannesburg, South Africa.

Duties: handling inquiries and preparing estimates for locally-built and/or imported switchboards and components. Handling orders and passing instructions to works. Salary £720 per annum, plus statutory cost-of-living allowance (at present £57 4s. p.a.). Applications, which will be treated in strict confidence, to

Employment and Welfare Manager, Johnson & Phillips, Ltd., Charlton, S.E.7

(E 564p)

SENIOR AND JUNIOR ESTIMATORS required by Bull Motors, Ipswich. The work involved covers the preparation of quotations for small and medium size electric motors, control gear, etc.—Applicants should submit full details of age, experience, salary required to: The Sales Manager, Bull Motors (E. R. & F. Turner, Ltd.), Foxhall Works, Ipswich. (E 553)

SWITCHGEAR. Good opportunity exists for keen DESIGN DRAUGHTSMAN, capable of working with a minimum of supervision, to assist in a programme of expansion of company's switchgear products. Only those having workshop training and actual experience of electro mechanical design of industrial switchgear up to 11 kV will be considered.

Applications, giving full particulars of age, experience and training, together with salary required, to Employment and Welfare Manager, Johnson and Phillips Ltd., Charlton, London S.E.7. (E 515)

TECHNICAL SALES ENGINEERS required by well-known manufacturers of miniature, switchboard and portable instruments, to handle sales on commission basis. All parts except London.—Box No. 1293, Electrical Times. (E 589)

THE STEEL COMPANY OF WALES LTD. Applications are invited for the position of POWER PLANT SHIFT CHARGE ENGINEER at the Margam and Abbey Works of The Steel Company of Wales Ltd. Applicants should have served a recognised apprenticeship with a major engineering company, and be able to produce evidence of a sound general and technical education. Experience in the following is desirable: (a) Previous experience as a Shift Charge Engineer; (b) high pressure boiler and turbine operator; (c) operational control of an interconnected h.t. industrial network; (d) other works auxiliary services. Salary will be in accordance with experience and qualifications.—Application to be made to The Superintendent, Personnel Services, P.O. Box No. 9, Port Talbot, Glam. (E 604)

TRANSFORMER DESIGNER. A competent Transformer Designer with experience in all classes of power transformers is required. Applications, stating age, experience, training and salary required, should be addressed to Employment and Welfare Manager, Johnson and Phillips Ltd., Charlton, London S.E.7. (E 516)

DRAUGHTSMEN

For South Africa

TWO DRAUGHTSMEN required for the works of Johnson and Phillips, Ltd., at Johannesburg, South Africa. The following qualifications are necessary.

Apprenticeship with a leading switchgear manufacturer, suitable technical training, at least two years' intensive drawing office experience. Senior or well experienced men preferred, but a younger man of the right calibre would be considered. Salary £600 to £780 per annum according to experience and seniority, plus statutory cost-of-living allowance (at present £57 4s. p.a.). Applications, which will be treated in strict confidence, to

Employment and Welfare Manager, Johnson & Phillips, Ltd., Charlton, S.E.7

(E 565p)

TRANSFORMER DRAUGHTSMAN. An experienced senior Transformer Draughtsman is required capable of handling work up to 5,000 kVA.—Applications, stating age, experience and salary required, should be addressed to Employment and Welfare Manager, Johnson and Phillips Ltd., Charlton, London S.E.7. (E 517)

UNIVERSITY GRADUATE with post-graduate training required by South Wales Switchgear Ltd., Blackwood, Mon. Excellent prospects.—Write, stating age, experience and salary required. (E 486)

YOUNG MECHANICAL ENGINEER, preferably with degree or equivalent, required immediately to take charge of development testing of small internal combustion engines. Previous test bed experience is essential. This is a new appointment holding good prospects for the right type of man. S.W. London area. Applicants should give full particulars of their training and experience, and state the salary they require.—Box No. 1267, Electrical Times. (E 544)

APPOINTMENTS WANTED

CANADA. ENERGETIC BUSINESS EXECUTIVE, Canadian, with years of practical experience, but still young, holding important administrative position with leading manufacturing company here, now intends returning to Canada. He therefore offers his experience to the managing director of a British firm, or other responsible party wishing to open up in Canada where there is undoubted scope for manufacturers. Further details by appointment.—Write, Box No. 1297, Electrical Times. (E 591)

ELECTRICIAN (32), pre-war C. and G. 1st class, B. and C. certificates. Full experience a.c. and d.c. installation and maintenance, desires change to interesting and progressive position. Preferably N. London region.—Box No. 1295, Electrical Times. (E 590)

REPRESENTATIVE. Commission; well connected Mid. Elect. Board, Wholesalers and industry in B'ham and Midlands seeks agencies.—Box No. 1275, Electrical Times. (E 559)

WELL-KNOWN MANUFACTURERS' AGENT shortly free. W.A. or S.S. and F.G. preferred, high level contacts with London, Southern, South Eastern and Eastern Area Boards, wholesalers and local authorities. Also Government Departments. Would consider salaried appointment, but commission basis preferred.—Box No. 1243, Electrical Times. (E 497)

WANTED

A.C./D.C. MOTORS, STARTERS, complete changeover installations, etc.—A.A. Electrical Co., Ltd., 67 Rothschild Road, Chiswick Park, W.4. Phone: Chiswick 5105. (A 20)

SCRAP ACCUMULATOR PLATES and Sediment wanted, any quantities. Also Storage Batteries purchased and dismantled.—Phone or write Elton Levy Co., Ltd., St. Ermin's (West Side), Caxton Street, London S.W. Phone: WHitehall 9621/2/3. (A 3)

ELECTRICAL REPAIR AND REWINDING BUSINESS WANTED

IN

London Industrial Area

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Room for Development

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BOX NO. 1171, ELECTRICAL TIMES

(E 345p)

WANTED.—D.C. and a.c. ball-bearing MOTORS.—Full details to Britannia Manufacturing Co., Ltd., 22/26 Britannia Walk, London N.1. (A 13)

WANTED, ROTARY CONVERTORS, any size.—Universal, 221 City Road, London E.C.1. (A 16)

WANTED for prompt cash, ferrous and non-ferrous SCRAP; also plant for dismantling. Buyers of second-hand machinery and plant for re-use.—W. and H. Cooper, Ltd., 176 Brady St., Bethnal Green, E.1. (A 1)

WANTED.—Large quantity of 4-in. outside diameter TUBES from the dismantling of old Babcock Water-tube Boilers. Best prices paid. Prepared to purchase Babcock and Wilcox Water-tube Boilers for dismantling.—Apply, giving full details to Midland Iron and Hardware Co., Cradley Heath. (A 5)

WORK WANTED

A.C. and d.c. Motor Rewinds and Repairs. Prompt service, fully guaranteed.—Edgware 9831 (4 lines). Service Electric Co. Ltd., Stanmore, Middx. (D 324)

ARMATURE ROTOR AND STATOR WINDING. We specialise in the repair and rewind of all types of electrical machines from fractional h.p. upwards. Special departments for vacuum cleaners, dryers, portable tools, etc. All work fully guaranteed.—Walter Crane, Greencoat Electrical Works, Westgate, Wakefield. Telephone 2172. (A 4)

CASTINGS, Fisher Foundries, Ltd., Great, Birmingham, have capacity for brass, gun metal and soft grey iron machine moulded repetition castings weighing 1-30 lb. Loose pattern work up to 3 cwt. Delivery by road to all parts. Tel.: B'ham, Victoria 0197. (D 326)

FOR the London area only. Capacity available for ENGINEERING DRAUGHTING AND TRACING, PATENT DRAWINGS, SHOWCARDS, AND MAPS.—Phone Tot. 5889. (E 607)

ONE YEAR'S GUARANTEE with all our rewinds, 7-day service. Vac., drill, hair-dryer armatures from 18/6. F.H.P. stators up to ½ h.p., £2 15/-.—H. G. Millett and Co., 54 Arnewood Road, Bournemouth. (E 558)

ZEROS REFRIGERATORS.—Complete range of repair and service now available. Equipment reconditioned to conform to pre-war manufacturers' specifications.—Time Engineers, Refrigeration Specialists, 60 Southend Road, Rainham, Essex. Tel.: Rainham 2358; or Southern Area Agency, Tel.: Springpark 4217. Electrical Spares supplied to the trade. (A 639)

AGENCIES

MANUFACTURERS' AGENTS ASSOCIATION, INC. (E.T.), 8 Bream's Buildings, London W.C.2, supplies free lists of Agents to Manufacturers seeking representation in important industrial centres. Membership available to established agents only. Particulars supplied. (A 7)

MANUFACTURERS OF ELECTRIC LAMPS are seeking well-introduced AGENTS in London and the South Midlands, and Wales. Commission basis.—Box No. 1283, Electrical Times. (E 575)

FOR SALE

CABLES & WIRE

ART SILK FLEXIBLES, TWIN TWISTED, 250 V, all sizes. Available from stock, in 10 distinct shades.—Samples and prices, Wandleside Cable Works, Ltd., 106 Garratt Lane, Wandsworth, S.W.18. (E 529)

PAPER INSULATED LEAD COVERED AND ARMOURED POWER CABLE to B.S.S. 480/1942, 660V. New and manufactured by Johnson and Phillips, Ediswan and British Electric, etc. At the following bargain prices:—

0·15	4 core	P.I.L.C. & S.	£375 per drum
0·1	4 core	P.I.L.C. & S.	£295 .. ..
0·1	4 core	P.I.L.C.S.W.A. & S.	£325 .. ..
0·04	4 core	P.I.L.C.S.W.A. & S.	£205 .. ..
0·0225	4 core	P.I.L.C.S.W.A. & S.	£155 .. ..

All drums are 500 yards each.

Write for full details to : Messrs. Lipton Products Ltd. Phoenix Works, Lamprell Street, Bow, London E.3. (E 554)

PAPER INSULATED ARMOURED CABLES to BSS 480/1942. Considerable stocks available.—Cable Jointers, Ltd., 49 Avenue Road, W.3. Acorn 4831/2. (E 489)

STANDARD BUCKLE CLIPS. For sale. Complete set of tools for hand or power presses to produce S.W.C. 2, 3, 4, 5, 6, and 9. Also material and carton boxes for same.—Apply, B. and S. Tools Ltd., Hartington Buildings, 45a Branston Street, Birmingham 18. (E 605)

TOUGH RUBBER CABLES. 15,000 yd. mixed, single, twin and twin with earth. All sizes 1·044 in. to 7·036 in. inclusive. In short lengths of 10 yd. to 25 yd. As one parcel, £12 per 1,000 yd. irrespective of size.—Box No. 1233, Electrical Times. (E 480)

DOMESTIC APPLIANCES

COMMERCIAL IRONS for all purposes.—Donaldsons Wireless Electric Irons, 31 Sloan Street, Leith. (A 164)

IMMERSION HEATERS. Grubb 2 kW and 3 kW standard voltages, all lengths, 12 in. to 36 in. Also 4 kW (non-taxable), 16 in. to 36 in. Fully guaranteed and immediate delivery. For illustrated brochure, latest lists and trade terms, write distributors, John Owner and Co., Springfield Road, Birmingham 13. Tel.: Spr. 2939. (C 302)

4-K.W. IMMERSION HEATERS, 26in. long with Satchwell thermostats, £6/10/- each, carr. and packing paid. —Winco Industries, 17 Stretford Road, Manchester 15. Tel.: Mos 1364. (E 485)

ENGINEERING PLANT & MATERIALS

ALUMINIUM ALLOY. Special offer: 6ft. x 3ft x 24 gauge flat or corrugated sheets, £9 9s. per dozen. Also angles available. All prices, carriage paid. Delivery ex-stock.—Sawyers Manufacturering Co., Ltd., Bures, Suffolk. Tel.: Bures 351/2. (B 335)

LADDERS (wooden and aluminium, all types), Trestles, Steps, Handcarts, etc., from Ramsay and Sons (Forfar) Ltd., Forfar (Tel. 172). (C 603)

SOUTHBEND 4½ in. and 8 in. Lathes. Louden 44 in. Facing Lathe. Nero motorised Capstan. 25 in. universal Milling Machine. Warner & Swasey motorised Capstan. Eckert Die-Casting Machine. Jones motorised plain Grinder. Jung 24 in. Surface Grinder. Snow 20 in. Table Grinder. New 6 ft 14G motorised Guillotine. 32 in. motorised Bandsaw. 10 in. and 16 in. Shaping Machines. Petbow & Quasi-Arc Welders. Cash or hire purchase.—Victa Engineering Co., Maidenhead. Phone 50. (E 549)

GENERATING PLANT

ALTERNATORS from stock. 400/440 V 3 phase, 50 c/s, 4-wire, with exciters and switchboards: 80 kW "Westinghouse" 1,000 r.p.m., 40 kW "E.C.C." 750 r.p.m., 28·1 kVA "Crompton-Parkinson" 1,500 r.p.m., 15 kW "G.E.C." 1,500 r.p.m. For full details, write: Thos. W. Ward, Ltd., Albion Works, Sheffield. Phone 26311 (ex 347). (E 109)

DIESEL ALTERNATORS in stock, 1 and 3 phase, standard voltages, up to 100 kVA; details post free on request.—Thos. W. Ward, Ltd., Albion Works, Sheffield. Phone 26311 (ex 347). (E 108)

THE Electroplant Co., Wembley, for any type of special or electrical plant. Specialities: CONVERTORS, GENERATING SETS, ELECTRICAL TEST EQUIPMENT. Ask for production range. (E 445)

1 ALTERNATOR, G.E.C. 6,500 kW 0·9 power factor 6·6 kV 3-phase 50 c/s, at 500 r.p.m. Two-bearing Alternator, complete with exciter and bedplate, together with panel.—Apply: C. J. Rice, 137 Mayplace Road West, Bexleyheath, Kent. Tel.: Bex/3282. (E 573)

100 KVA MODERN DIESEL ALTERNATOR SET. Comp.: vert. 4-cyl solid injection oil engine on baseplate coupled to 400/230 V 3 phase 50 c/s 1,000 r.p.m. alternator. Details on request.—Thos. W. Ward, Ltd., Albion Works, Sheffield. (E 112)

375 KVA L.D.M. ALTERNATOR, 400 V, 3 phase 50 c/s 4-wire 375 r.p.m., with exciter, mounted on baseplate, with single pedestal bearing.—Thos. W. Ward, Ltd., Albion Works, Sheffield. Phone 26311 (ex 347). (E 114)

LIGHTING EQUIPMENT

PURLEY CHOKES AND BALLASTS. Silent operation, excellent performance, efficient, long life, vacuum impregnated, quick delivery. Low price (e.g. Purley Queen, 80 watts, 14/6 each, less quantity and cash discounts). Quotations for export.—F. W. Blanshard, Ltd. (Dept. ET), Purley, Surrey. (E 343)

SPECIAL CLEARANCE OF SURPLUS STOCK LINES!! Lighting Fittings and Glassware—industrial types. No reasonable offer refused.—J. and F. Stone Lighting and Radio Ltd., Edgware Road, The Hyde, London, N.W.9. (E 581)

METERS

A.C./D.C. SLOTMETERS (prepayment meters) all types and sizes. We supply Electricity Boards and Govt. Depts., Billiard Switches and Time Switches from stock. If you need reliable instruments write to: Brent Electrical Co., 6 Holmdale Gardens, Hendon, London N.W.4. (A 15)

A.C. and D.C. QUARTERLY & PREPAYMENT METERS. Electric Meter Co., Melville Lane, Torquay. (E 441)

HOUSE SERVICE METERS, a.c. or d.c., quarterly or prepayment.—Universal Electrical, 221 City Road, London E.C.1. (C 51)

HOUSE SERVICE METERS from 5/-. Guar. two years. Electric Meter Co., Melville Lane, Torquay. (E 442)

METERS, a.c. and d.c., new and reconditioned, all types; quarterly, single and 3-phase, 3 and 4 wire, 2½ to 1,000 amp; prepayment, single and double tariff, single, dual, and triple coin, fixed and variable tariff, 2½ to 50 amp. M.D.I., Billiards Switches, Rent Collectors. Prices from 5/-, carriage paid. Two-year guarantee; immediate delivery.—Illustrated catalogue from The Electric Meter Co., 16 Melville Lane, Torquay. (E 440)

MOTORS & STARTERS

A. ELECTRICAL CO. — FOR A.C./D.C. MOTORS, SWITCHGEAR, EXHAUST FANS, HOISTS, REDUCTION GEARS, new or reconditioned units.—Chiswick 3105, Fairlands 8279, 67 Rothschild Road, W.4. (A 19)

A.C. and D.C. MOTORS, alternators, generators, generating sets, transformers, welding equipment, plating plant, control gear, switchgear, portable electric tools, etc. Write for current electrical stock list, post free.—Thos. W. Ward, Ltd., Albion Works, Sheffield. Phone 26311 (ex 347). (E 107)

A.C. and D.C. MOTORS, GENERATORS, from stock.—Service Electric Co., Ltd., Honeypot Lane, Stanmore, Middx. Edgware 6631/4. (A 476)

A.C. and D.C. MOTORS, all sizes, large stocks, fully guaranteed.—Milo Engineering Works, Ltd., Milo Road, East Dulwich, S.E.22 (Forest Hill 2278-9). (A 10)

A.C. and D.C. MOTORS, GENERATORS, SWITCHGEAR, etc., always in stock. Let me have your inquiries.—G. E. Whittaker, Wellington Mill, Bolton Road, Blackburn. Tel.: 7232. (A 12)

BRAND NEW A.C. MOTORS, 1/3rd to 90 h.p. Slip Ring and Squirrel Cages, 400/440 V. 3 phase 50 c/s at 750 r.p.m., 1,000 r.p.m. and 1,500 r.p.m. With or without control gear. Immediate despatch from stock. Attractive prices. Full details post free from Thos. W. Ward Ltd., Albion Works, Sheffield. (E 110)

ELECTRIC MOTORS, 300 h.p. slipring by G.E.C. Speed, 395 r.p.m. Open type frame, R.O.B. Continuously rated. With Ellison circuit breaker and starter.

Two 150-h.p. squirrel cage by Met-Vick. Speed, 975 r.p.m. Screen-protected type, B.R.B., with drip-proof cowls. Suitable for auto transformer starting. With starter.

150-h.p. synchronous induction by Mather and Platt. Speed, 750 r.p.m. Open protected type, R.O.B. With circuit breaker, starter, and exciter.

135-h.p. slipring induction by British Electric Plant. Speed, 1,450 r.p.m. Screen-protected type, R.O.B. With Ellison circuit breaker and starter.

The above for 400/440 V, 3-phase, 50 c/s supply.

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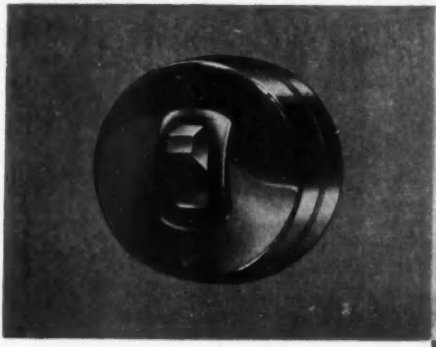

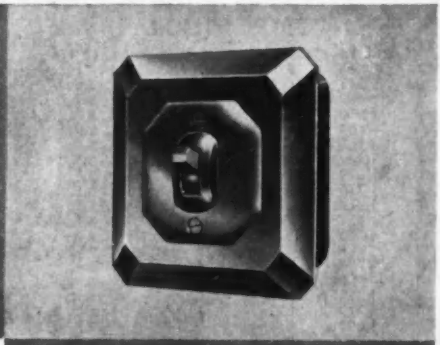

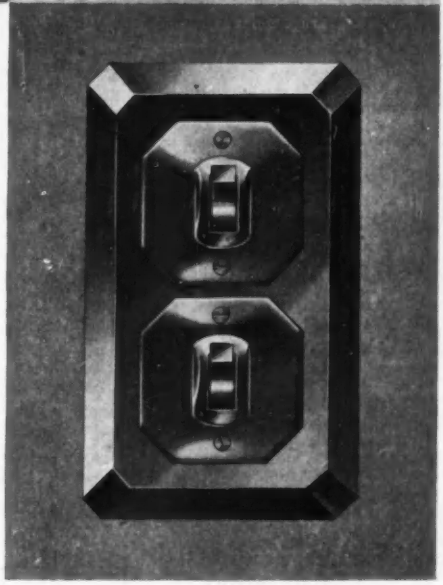

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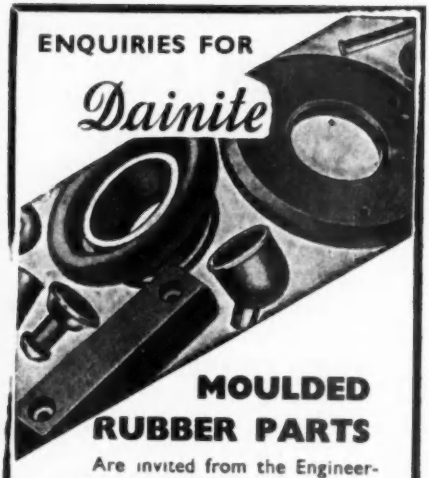

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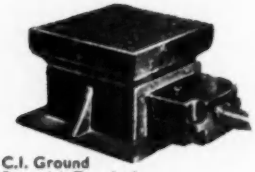
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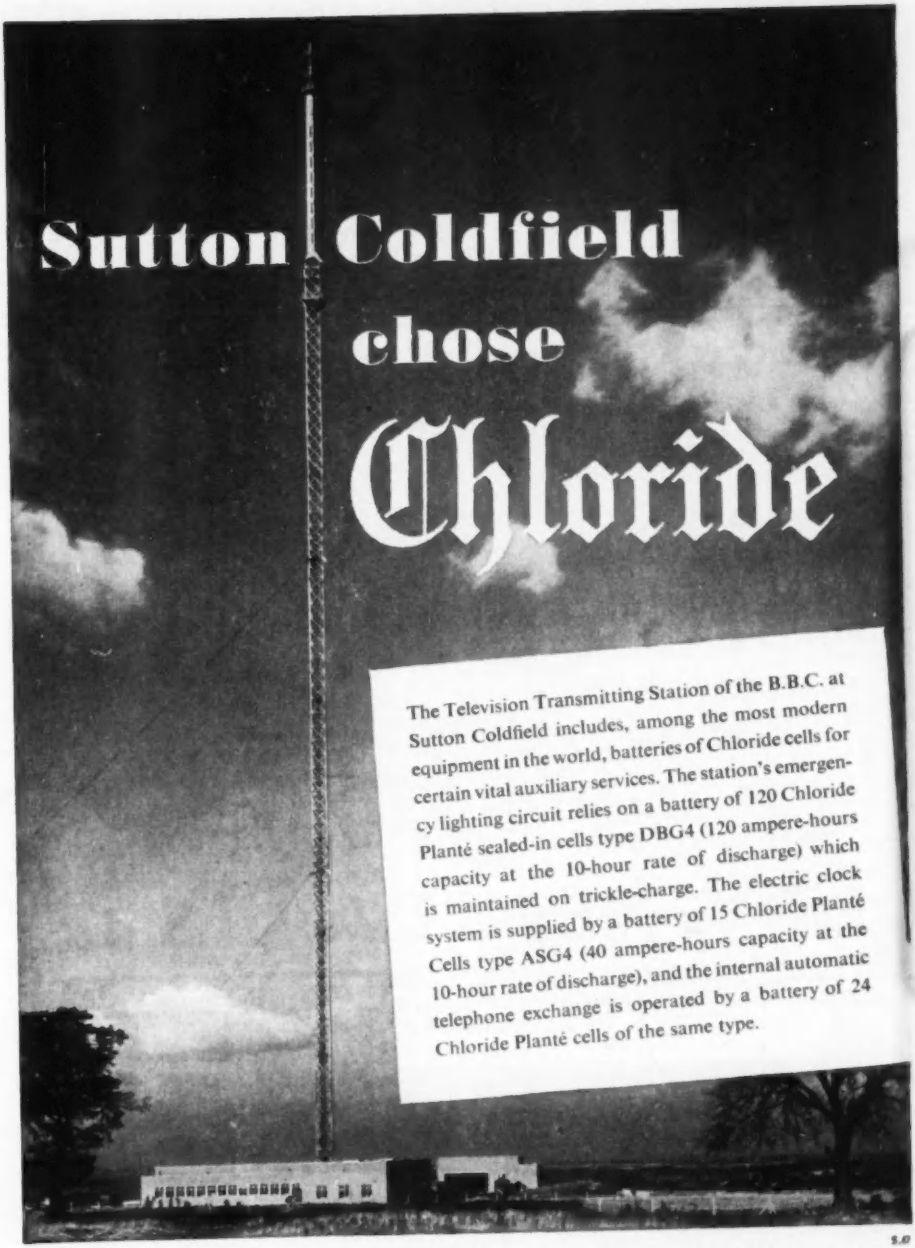

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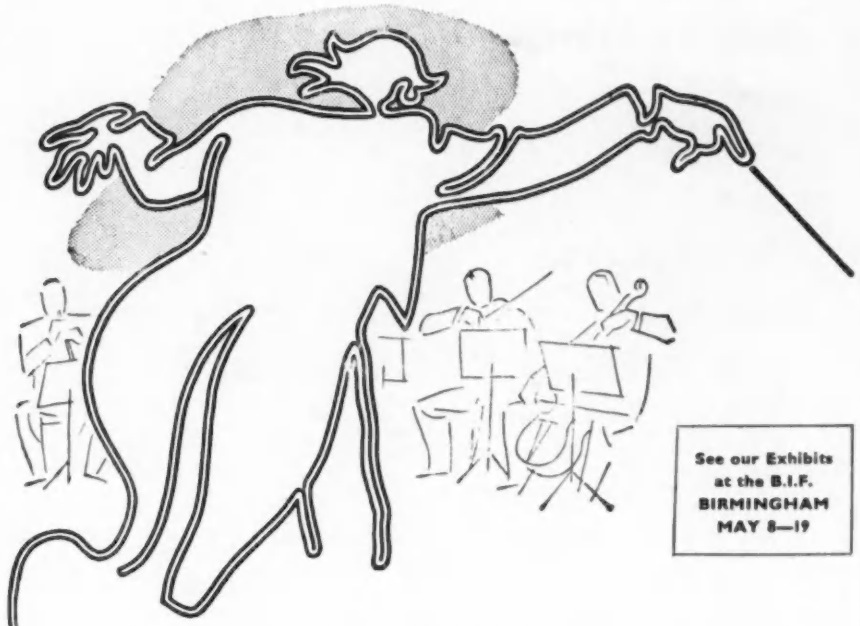

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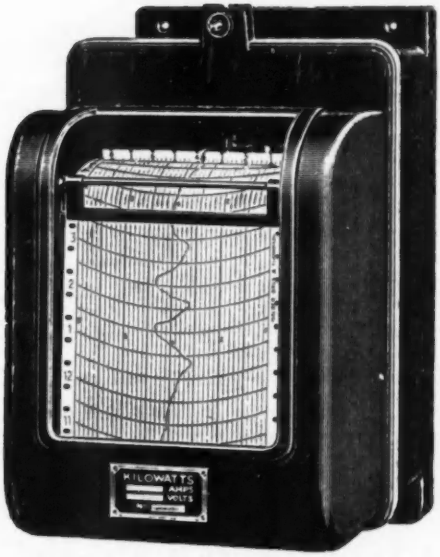

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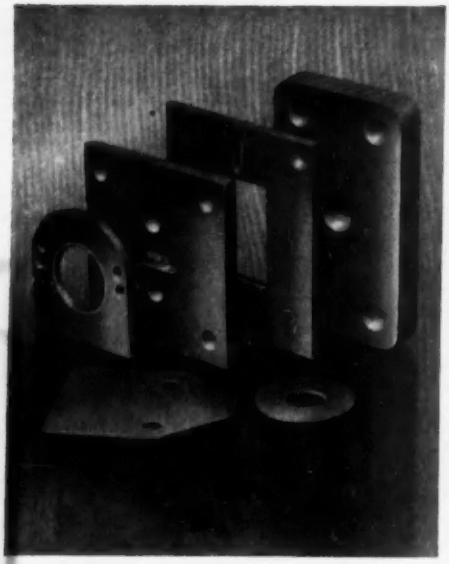

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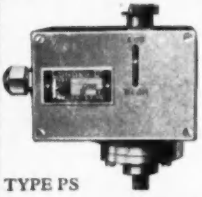

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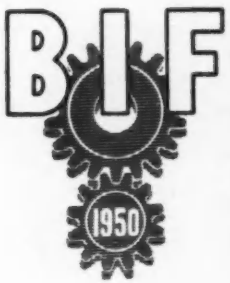

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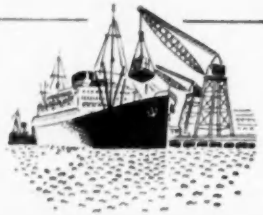

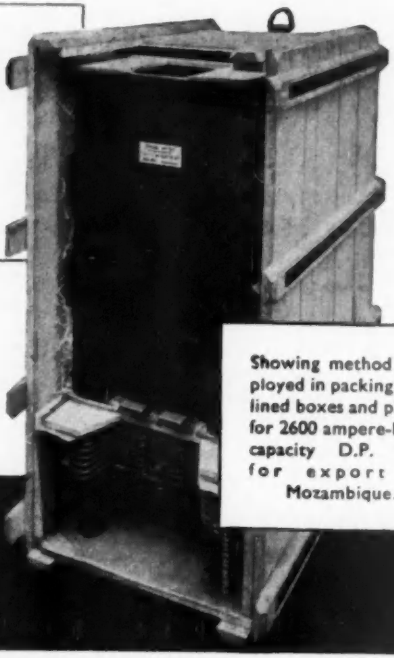

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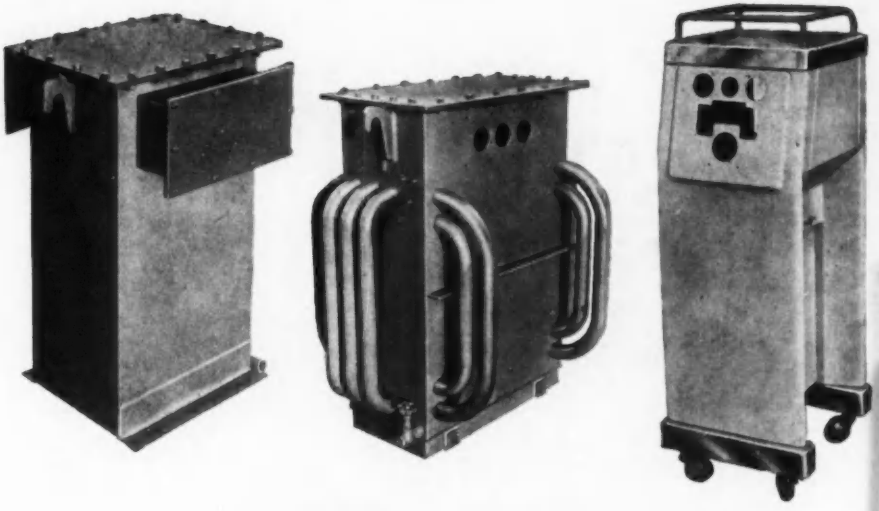

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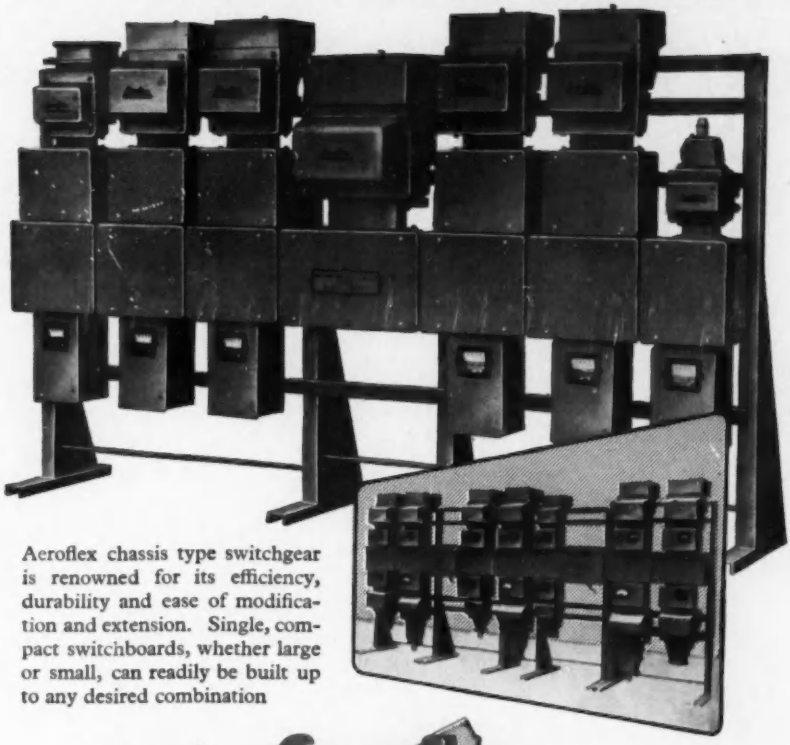
SWITCHBOARDS



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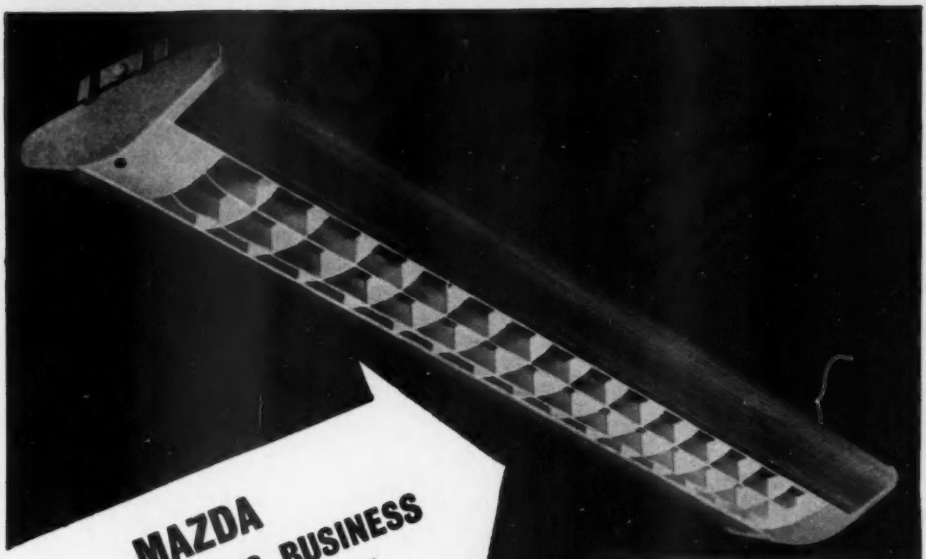

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